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Architecture and Building in Cyprus.

THE use of *arconi*, or large pointed arches of stone, in place of ordinary beams or trusses, for the support of the floors of dwelling-houses, is a peculiar feature in the domestic architecture of the island of Cyprus. It affords a special motive for decoration, from the desire which is naturally felt to give relief to the large plain spandrels, undivided by panelling or framework, and uniformly painted white, which divide the arches. So universal is the adoption of this mode of structure that, even in cases where there is no abutment that can safely resist the thrust of a large arch, the form is imitated in wood, which is coloured to represent masonry. The arches balance one another, but tie-bars are never introduced. They are of pointed form, the span varying from 18 ft. to 30 ft., and the altitude varying from one-half to two-thirds of the width of the span. The mean depth of the voussoirs, or rim of the arch, is from 12 in. to 16 in., and the thickness varies from 7 in. to 10 in.

The area to be covered by a building is divided into rectangles, of which the width is not more than from 9 ft. to 12 ft., by these *arconi*. Upon them are laid beams made of the wood which the island supplies, in the way of joists, about a foot apart, the ends being mortised together. On these joists is laid a parallel series of whole canes on a stratum of cane matting, covered with an inch or two of sand or fine gravel. On this a pavement of stone slabs is laid, set in mortar.

Another distinctive feature of the architecture of Cyprus is the rigid orientation of the buildings. In all cases where it is possible, the length of the building is drawn in a line from east to west, so as to offer one face to the north wind and another to the noon-day sun. On the southern exposure is generally placed a *loggia* looking out on a garden, and shaded by trees, chiefly the caruba or the lemon-tree. On the north are generally placed the various appendages to the main building. This rule is so rigidly observed, that where the streets do not run east and west, the ground-floor of the adjoining houses is constructed parallel with the line of the street, but the remainder of the edifice is carried up at an angle, so as to secure the orientation of the walls; cantilevers or brackets being introduced where required, made of wood, and variously ornamented. Where the difference of line is very great, the change is effected by a series of steps. This curious method of building is also found to prevail in Alexandria in Egypt.

The use of these *arconi*, instead of the ordinary beams, is attributed by Signor Luigi (an engineer pupil, holding a travelling studentship, from whose report to the Italian Minister of Public Works we take the preceding details) to the absence of timber of a size sufficient to make large beams in Cyprus. In another part of the report this absence is attributed to the ravages of the Turks, who have cut down and devastated the magnificent forests which dotted the island before its conquest by those depredators. We need not say that the influence of the materials which a country yields on the art and architecture of that country (as to which a recent writer in an art periodical appears to consider himself to be the discoverer) is well known. If there be any want of just appreciation of the subject, it is mainly as to the very restricted local limits within which this influence often makes itself perceptible. Thus in that part of the Adriatic seaboard where a fine travertine is deposited by the streams, decorative sculpture blossoms on every house-front almost with the luxuriance of a growth of ivy. At a very short distance, in the hills, not a scrap of this rich decoration is to be seen. But the difficulty in the present case is to some extent that of date. We are not disposed to attribute the origin of the *arconi* to so late a time as the Turkish conquest. As far as we are in possession of data on which to form an opinion, it has usually been at a very early period in the art history of a people that their canons of structure were fixed, and no doubt fixed in accordance with the nature of their building materials. Thus we find wooden forms of structure made permanent in stone. Thus, even in the case of Cyprus, we are told of stone forms of structure being simulated in wood. The *arconi* of Cyprus might with far greater probability have been traced to the influence of Roman builders. Enormous structures at Rome, Verona, Capua, Posilippo, Pompeii, and elsewhere in Italy, yet display the lofty vaults on which the Romans of the Imperial times reared their theatres, their baths, and their palaces. But these Italian vaults and arches, so far as our present acquaintance with them extends, are semicircular. Nowhere in Italy, in buildings earlier than the Papal sway, do we remember to have found the *sesto acuto*, or pointed arch. Arabic or Moorish influence is rather indicated by the occurrence of this form in Cyprus. At all events, the assumption that the *arconi* are the natural outcome of the destruction of the forests by the Turks is one that we are not prepared to admit without direct and conclusive evidence.

The building materials of Cyprus, though marble has not been found in the island, are abundant and varied. There is a calcareous stone approaching the texture of chalk, which abounds in the chain of Cerigne, the northern of the two ranges which traverse the island in an easterly and westerly direction, of a grey colour; which is sufficiently compact, as well as being of fine grain, to be made a substitute for marble in work which is not subjected to the weather. It is, however, difficult to obtain in large blocks, and suffers much if exposed. A material in more common use is an eocene sandstone, of yellow colour and fine grain, which is said closely to resemble in its appearance the well-known eocene limestone of the Paris basin. This occurs in regular beds of from 16 in. to 18 in. thick, sometimes, though rarely, attaining the thickness of 3 ft. It alternates with strata of very friable stone, and is obtainable in any required dimensions by the use of wooden or iron wedges. Powder is not employed in quarrying it. When first extracted, it is very soft and very easily wrought. It is capable of receiving ornamental and very delicate work, and hardens as it dries on exposure to the air. Its chief defect is that it cannot resist frost.

The most abundant building material in the island is a shell-bearing conglomerate of the quarternary period, which occurs in very regular beds in the neighbourhood of the sea. It is formed of fine sand, small pebbles, and a large number of small shells and their *detritus*. It often contains fragments of coral. It is easy to work when first quarried, though not so much so as the previously-described stone. It is of a fine yellowish-brown tint, and its effect in structural harmony is very good. Most of the architectural monuments of Cyprus are built of this stone.

Amongst these buildings may be named the tower of Commenda, the cathedral, the Palace of the Knights, the wall of Nicosia, the abbey of Lapais, the castles of Kantara, Buffavento, and Saint Ilarion, which crown the three highest peaks of the Cerigne chain of mountains, and all the Gothic architecture of Famagosta. The latter, very delicately wrought, shows the admirable durability of the stone, which has been tested by the lapse of five or six centuries. A proof of the estimation in which this stone is held is afforded by the fact that the castle of Buffavento is constructed of this material, quarried on the shore below, although the peak on which the castle stands is formed of the Jurassic limestone. At present this stone is but little used in building, as the houses are generally constructed of sun-baked brick. It is used for voussoirs, mouldings, &c., and in the rough state costs from 7 to 8 francs per mètre cube, or from 2½d. per cubic foot upwards.

The lime of Cyprus is of indifferent quality It is furnished principally from the chain of the Cerigne mountains. Lime was recently produced by burning pieces of marble found in the ruins of the ancient cities of the island, but that kind of vandalism is now forbidden. Kitrea is the district which now supplies the whole of the island with lime. It is irregularly burnt, and not good, though it is slightly hydraulic. It

costs from 10 to 12 paras the oca, which is equal to from 1s. 3d. to 1s. 6d. per hundredweight. Little use, however, is made of lime in domestic buildings.

Cyprus is famous for that form of sulphate of lime which the Italians know by the name of *gesso*. It is found in abundance in the white marl, which forms the soil of half of the island. It occurs in many varieties, and of a texture that is either compact, laminated, tabular, crystalline, or fibrous, the latter kind being the most pure. The tabular *gesso* readily divides into flags of large size, and is in use throughout the island for pavements, steps, window-cills, facings, &c. The pavements of this material are more durable than would at first appear to be the case, in consequence of the Oriental habits of the islanders, in the way of wearing slippers, and of covering the floors with carpets or mats. This tabular *gesso* is quarried in the open air by means of long wedges, dividing the block into prismatic masses, which are then split into layers. These are afterwards squared, and roughly dressed. Large quantities are produced at Pyla, Ipsos, Caclia, and Macrassica, and they are exported to Syria and to Malta. They are generally from 18 in. to 2 ft. wide, and cost from 7½d. to 8d. per square yard. Compact, granular, and laminated *gesso* abounds at Ipsos, Lessi, Aradippo, Athiena, Larnaca, and Nicosia, and is used for plaster. The "lance-head *gesso*" yields an excellent scagliola, and is found at Pyla and at Ipsos, but in small quantities.

The burning of the *gesso* is effected in the most primitive manner. The stone is placed in conical heaps of two yards in diameter, and a yard and a half high, a cavity being left in the midst, which is filled with roots or brushwood, that yield more smoke than heat. Thus the stone becomes blackened, and irregularly burnt. When burnt, it sells at from 3 to 4 paras the oca, or from 4½d. to 5½d. per cwt. The quality is excellent, and, with more careful preparation, it might be exported in large quantities.

Cyprus abounds in good clay; and excellent bricks are made at Nicosia, Larnaca, Mazoto, Arpesa, and Limasol. The clay is mixed as is customary in Europe, and the bricks are burnt in clamps, the fuel being roots, cotton stalks, and brushwood. They have the same dimensions as Italian bricks, and cost from 16s. to 20s. per thousand. They are, however, but little used, the Cypriots preferring to use sun-dried bricks, which, owing to the dryness of the climate, the great heat of the summer, and the low height to which the houses are reared, answer very well. These bricks are made of sixteen or eighteen parts of brick earth, mixed with one part of straw. They are made in moulds measuring 16 in. by 20 in. by 25 in., and are laid to dry on a floor exposed to the sun for ten or fifteen days. They attain a respectable hardness and durability. Sometimes sea-weed (*alga marina*) is used in the composition instead of straw. A man and two boys will make as many as 1,000 of these bricks in a day. The cost is from 12s. to 14s. per thousand.

Finer clay, fit for pottery, is also found in the island. Larnaca, Limasol, Lapisthos, Varostra, and Como are the localities in which pottery for domestic use is made, as well as water-pots for irrigation, and pipes for the conduct of water. The utensils are well made and properly burnt; but they are wanting in elegance, and are but rarely glazed. Fine clay, fit for plates, tazze, and similar objects, is found near Carpazo, but in quantities so small as not to cover the cost of working.

The ordinary houses of the peasantry, consisting of one or two rooms, are built of these sun-dried bricks, and thatched with straw. But they are not ill-adapted to the habits of the people, and are especially calculated to resist the torrid heat of the insular summer.

The bettermost houses are built on foundations of stone set in the lime of Kitrea, which is slightly hydraulic, mixed with sand, and with Italian pozzolana. The lime is allowed to slake by exposure to the air; it is used in the state of powder. The depth of the foundations is small; from 18 in. to 4 ft. 6 in. below the surface of the soil. The thickness of the foundation varies from 2 ft. to 2 ft. 6 in. For houses of a single story the foundation is carried up for 18 in. or 20 in. above the ground. For houses in two stories, the walls of the lower plane are built in masonry, at least as high as the upper cill of the windows. Above this the wall is carried up with a thickness of from 18 in. to 21 in. of sun-dried bricks, set in clay and straw. The bricks are laid so as form the thickness of the wall by their length, and are rapidly set by eye. The joints are never more than 4-10th in. wide. It is rarely the case that either plumb-line or level is used by the builders. The work is roughly done, and it is much if the angles of the building are vertical.

A bricklayer, with two boys, will lay from 500 to 600 bricks in a day, making from 7½ to 9 cubic yards of work. The construction is carried on in layers of from 6 ft. to 9 ft. deep, each layer being left for some days to dry before a new one is added. The wall, when finished, is plastered over without with a wash of clay mixed with straw, or clay and tow, and within with lime-wash, or a thin layer of *gesso*. The outer coating has to be renewed every third year, as it suffers from the rain. The material for coating the walls is supplied to the workmen in the most primitive manner, being made into a ball, and thrown from hand till it reaches the man who has to spread it.

The doorways are from 3 ft. 3 in. to 6 ft. 3 in. wide, and the windows from 3 ft. to 5 ft. They are always provided with a wooden cill. Above they are covered with slabs of stone or of *gesso*, or with wood. In the latter case relieving arches are turned above the architrave. The cost of the *arconi*, of which we have already spoken as supporting the floors, is from 10d. to 1s. per foot of span. The material of which these arches are built is generally the yellow tertiary sandstone, before described, which is called *macigno*. The roofs are formed in the same way as the floors, but with a slope of from 7 to 1 to 10 to 1. It is rarely the case that ceilings are introduced. The framework of the doors and windows is of the rudest description, and is only endurable in consequence of the warmth and dryness of the climate. Glass is used in the windows, in the better class of houses, but it is not so fixed as to close the apertures against draughts. Sometimes the window-frames are painted; but they are generally merely rubbed with oil so as to show the graining of the wood.

The kitchens are unworthy of the name; the fireplace consists of a bench of masonry with two or three *fornelli* (little vertical holes), never provided with top or chimney. The smoke spreads freely in the air, and escapes through small holes left in the walls near the roof. Chimneys are unknown. Signor Luiggi says that he did not see one in Cyprus. The ovens are very simple. They are of an internal diameter of about 30 inches, and are built of sun-dried bricks, set in clay and straw. They are extremely economical, both as to their first construction (costing from four shillings to five shillings each) and from the small quantity of fuel which they require.

All the houses are provided with wells, of from 32 in. to 40 in. in diameter, and from 10 ft. to 33 ft. in depth. Beneath an upper stratum of compact clay, or of soft conglomerate, occurs a water-bearing sand, more or less compact. The water is not always good, being often charged with salts of soda and of magnesia.

The wells are sunk by two men, one digging, and the other removing the material. In a day they will sink from 6 ft. to 9 ft. It is rarely the case that any lining is used, a dwarf wall round the aperture being the utmost finish that is usual. The cost of these wells varies from 10 francs for a depth of 3½ mètres in compact clay soil, to as much as 60 francs for a depth of 10 mètres in hard conglomerate.

In the principal towns, Nicosia, Famagosta, and Larnaca, in addition to private wells and public fountains, fed from connected wells, vertical shafts are sunk into the water-bearing stratum, from 5 to 10 mètres apart, and are connected by little tunnels, 3 ft. wide and 6 ft. or 7 ft. high, directed as nearly as possible according to the dip of the subterranean water surface. They are placed so close together, not for the sake of increasing the water yield, but for the guidance of the workmen, and the sake of ventilation in excavating the tunnels. The tunnel is commenced at the lowest point, and runs upwards. As little rise as possible is given to it, and masonry lining is very seldom used. The cost of this work, including shafts, tunnel, and what little masonry used, is from 50 to 80 francs per mètre run of tunnel. The canal is continued in the open, the sides being walled, and rendered with a mixture of lime and earth which forms a sort of hydraulic cement, and the conduit being supported by embankment or masonry where the ground requires. At Nicosia at the present time iron tubing is being substituted for the ancient conduits in masonry.

ART COMPANIES (LIMITED).

For some time past there has been an increasing tendency on the part of the public to take their artistic taste and opinions, as Mr. Justin M'Carthy says, in his "History of Modern England," "in platoons," in the same way that Charlemagne's converts got their Christianity. People have been impressed with a considerable desire to have furniture that is in good taste, coupled with an inability or disinclination to give any thought of their own to it, or to exercise any individual taste. Thus the purveyors of furniture of all kinds have had very much their own way of it: they have engaged artists, have had furniture and upholstery designed in what was recognised as the taste of the day, and some of the leading firms dealing in this class of work have become practically almost purveyors of taste for the public, and have been half-unconsciously accepted as such by the latter. This unsatisfactory and half-understood way of doing the business is, however, no longer to be tolerated. If a thing is right to be done at all, let it be done openly and thoroughly. If art can be furnished retail, why not wholesale? Accordingly we have before us the prospectuses of two Limited Companies, the object of which is to purvey artistic taste for the public at large.

The "Furnishers' Alliance Company," with a capital of 50,000*l.* in 10,000 shares of 5*l.* each, is under the artistic superintendence of Dr. Christopher Dresser, whose knowledge of decoration, theoretically and practically, is not to be questioned. The company undertakes to supply the general public with artistic house-furnishing requirements of the best description, including furniture, carpets, wall decorations, hangings, pottery, table glass, silversmith's wares, hardware, &c., to meet the "unprecedented demand for artistic objects" which "the advanced standard of public taste during the last few years" has created. The whole direction and the selection of goods is entrusted to the eminent authority above named, and we are assured that "no object, whether an important work or a mere adjunct of furnishing, will be displayed unless its art qualities have been duly tested; the public will thus have an absolute guarantee that every article sold, whether costly or cheap, will possess intrinsic art merit, as regards its originality, design, and execution." By what process the art qualities of any object are to be "tested" we are not informed; but no doubt we are behind the age. There is evidently some new process of what may be called æsthetic chemistry invented, to which each object will be subjected for quantitative analysis, and we may expect, when the new establishment is in working order, to see the objects that are offered ticketed with the result of the analysis, as thus:

Form.....	33·715
Colour	41·23
Æsthetic correctness and suitability	25·055
	100

Thus, it will be possible for the public, by a simple process of addition, and by due observance of the figures representing each quality in the article, to obtain by precise analysis the special art-quality they want; at least, so we conclude from the terms of the prospectus.

The other company, "The London Decorating Company (Limited)," issue a prospectus which, on the outside of it, is more obviously and ostensibly an art scheme, seeing that it has a "picture" on the back of three allegorical figures with a decorated wall behind. The art department in this company is under the directorship of Mr. Walter Crane, from whose pencil we may presume there came these three figures of young women typifying Science, Art, and Health, the latter, we observe, turning her back on the spectator, perhaps a delicate allusion to the difficulties in the way of our health caused by fog and smoke, of which we are having more than usual at present. On turning to the prospectus, however, we find that health takes a rather prominent part in the society's scheme, which seems to have arisen out of an idea of extending the business of a certain Stone Paint and Protective Liquid Company, which has been taken over, so as to make it include the provision of artistic decoration also. This way of putting it gives no doubt a sort of practical status to the company, though, in the end, we presume it is pretty much the same thing as the other, and that the object of both is to

turn to commercial account the now-prevalent fashionable turn in favour of what is called art-furniture and art-decoration. As far as the practical side of the matter is concerned, the company's prospectus is satisfactory and sensible. They observe that many processes and materials used in decoration are known to be injurious to health, that scientific men are constantly recommending important and valuable processes, which the trade would gladly adopt if the necessary materials were provided through the several channels; but that scarcely any one knows where they may be obtained, and that sometimes they cannot be obtained at all; that means, we suppose, that they cannot be obtained consistently with commercial conditions. The London Decorating Company undertakes to purvey for and supply all such materials and processes, in regard to which they will be advised by Mr. Crookes, F.R.S., who will supervise the chemical tests and processes employed to secure that the paints, paper-hangings, and other materials, shall be free from poisonous or injurious qualities. So far so good. That is a process which a company under the advice of scientific experts may very well and usefully perform, and the company show considerable generalship and perception of what is likely to "go down" in thus emphasising the health part of their scheme. And in regard to the art part of it, the company are at least wisely reticent in not offering to supply any "test" of artistic quality. They also state that other artists and designers of high standing will be associated with the company, "so that all styles of art may be readily available," and, so far as the wording of the circular goes, it would appear that the customer in special cases may even be allowed to select his artist, though the indications on this head are somewhat vague. In other cases, where the work is not of a highly important nature, and where the customer does not want to spend more than he can help, a schedule of questions will be sent, the answers to which "will enable the artist to select a suitable design from the standing designs of the company, which will be numerous and regularly increased."

Now what does all this really mean? Of course, in the first instance, it means that the promoters think they have evolved a good investment for money, and expect to make such company a paying concern. That is the way in which we have come to look upon art, then, as a thing to be "exploited" for the benefit of shareholders. This is certainly not a very high view to take of the matter, to begin with. But the essential fallacy of both schemes is contained in the preposterous idea that art can be produced wholesale by a company, in the same way as patent locks or any other article of household furniture. The last-named company, as we observed, have sense enough to be a little reticent on this point; but they hit, without knowing it, on the real objection to their scheme in their way of recommending their art-director, "whose pictures are so familiar to every cultivated household." Just so. The type of art which is represented, and well represented, by the work of Mr. Crane, is what it is the fashion to admire, and "cultivated households" are those which believe in this type of art, and fill their houses with it. Those who do not are, we presume, uncultivated households. This is a most delightful begging of the whole question. We know a good many cultivated people who do not think so much of this type of art, of mere lank conventional figures all with the same expression; but the company would be ready, of course, to answer any argument against the fashionable form of decorative art by the simple and, we admit, entirely unanswerable retort that those who do not care for it are not cultivated. But the fallacy of the whole scheme lies in the radically false idea that art, which is to be of any value, can be produced wholesale to order, and of any pattern. What makes artistic design of any value is the presence of individual thought and individual style and expression; and the influence of such companies as we have referred to will be, must be, to stifle still further the influence of individual taste, and to reduce decorative art to a mere dead fashion followed for fashion's sake. Such schemes, if they succeed and acquire large public patronage, will put the finishing touch to the absurd affectation which has recently possessed the public mind of having all their houses decorated in a certain prevalent fashion, all their furniture made according to what are supposed to be "art" patterns. Go into house after house, and you find the same style of furniture and wall-papers, selected, not as the result of individual preferences arising out of the taste and study of the owners, but as what "art-furniture" firms are now making, and in regard to which anything that can really be called art or design really enters about as much as it enters into the tailor's consideration of the cut of your coat,—as much, but not more. People are encouraged to think themselves artistic because they use this type of furniture, when in reality they are simply following a precedent; and it is well known that some of the most prominent decorating firms will not even allow a customer to have a taste of his own, and will tell him so broadly, or hint almost as plainly that he must take what combinations they think best. No really "cultivated" person would condescend to give up his own tastes in this way into the hands of an art-upholsterer for a moment. But now we are offered schemes which will reduce all this affectation and pedantry to a wholesale system. The work of the individual artist, which, even under the present retail system of art-furnishing, is usually quite lost under the name of the "firm," would now (should these schemes succeed) be yet more surely swamped, and what is called "art" would be regarded as a form of goods to be produced wholesale to order from a manufactory. To all people who have any wide "cultivation," any insight into what "art" really means, and what makes it worth having or caring about, the mere statement of the case would be sufficient to show its absurdity. To those who choose to embark capital in such a speculation, we have, of course, nothing to say; that is their concern, and if they believe that the public have arrived at that state of "gulliability," in regard to æsthetics, that will induce them to believe that they can buy art at an art-shop, let them go in and win by all means, only do not let them pretend to pose as promoters of art or of artistic education. They have just as much right to such a standing as a company would have who, if there should arise a great fashion for one particular school of painting, say the Dutch, should open an establishment for providing an unlimited number of pictures in the manner of Teniers or Ostade. Decorations are a less important, and in some sense less intellectual, form of art than pictures, but what holds good in respect of one branch of art holds good in all. "Parroting" is of no real value; individual genius and thought working in reference to nature and to natural principles is what makes art, and nothing produced by rule and on a system can be of any value; and our advice to those who are attracted by such schemes is to consider a little what art really means, "to beware of spurious imitations," and not to allow themselves to be gulled into imagining that art can be turned out to order from an art-mill, in any quantities, like so many bales of Manchester goods.

BEWICK'S WORKS.

THE exhibition of a number of Bewick's original water-colour studies for his subjects, along with impressions of the engravings from them, at the Fine-Art Society's Galleries in New Bond-street, will probably bring a good many of the general public who visit it to a first idea of the nature of Bewick's genius and the character of his work. Familiar as his name is to all who are especially interested in art, we suspect that to the outside circle it has been often little more than a name, and in some cases not even that. The exhibition of some of his works collectively ought, therefore, to be very useful, and we trust it will receive the attention it deserves, though it is a great pity that works of so minute and delicate a nature should not be examined under a better light than is to be found in the small front room in which they are exhibited.

The exhibition has been rendered possible by the liberality of the Misses Bewick in lending a large number of their father's drawings and engravings. The catalogue *raisonnée* offered to visitors gives a sketch of the circumstances of the artist's life, with comments on the drawings, which last are much too wordy and pretentious, and in some cases utterly absurd. The rage for deluging people with reflections on the works of art which they go to see is becoming a positive nuisance and impertinence, and ought to be checked. Nearly three pages of "gush" are offered to the holder of the catalogue in regard to the one little tailpiece of men shooting in a snow-covered landscape, with the usual cant phrases about "wealth of conception," &c., and with discoveries as to the meaning of this and that detail in the landscape which would probably have very much astonished Bewick if he could have read them. In the middle distance of the landscape is a rail-fence half-seen above the snow, a very small incident in a very small work; but this is how the critic fastens on it:—"The upright posts of the fence have individuality; thus the inequalities in the distances between them tell that the carpenter who set them up considered as he went on, but not before, how the line was to be spaced out and his material economised; again, some of the posts have, more than others, yielded to the weather; some posts have sunk or gone away in bad foundations or soft ground, and, as the circumstances compelled, sloped to the right or left." Wonderful! One would suppose that a dilapidated post-and-rail fence were one of the most unusual and significant objects to be seen in the world. In regard to another drawing, representing an old decayed boat, we are called on to admire "the dexterity which so deftly foreshortened the broken planks and battered ribs," as if artists, as a rule, did not attempt to draw in perspective; and we are told that "each plank has a biography in these details." The drawings are both admirable specimens of Bewick's peculiar qualities, but to have this kind of rant about them put into one's hands is enough to disgust amateurs who have any remnants of common sense left in their composition.

No one can look over this collection of drawings without being sometimes reminded of Hollar, of whose works a large collection was exhibited in the same gallery not very long since. Like Hollar, Bewick delighted in finishing with the most minute realism small objects which gave occasion for the display of the highest technical qualities of execution; Bewick usually chooses feathers for this kind of study, Hollar liked nothing better than shells, but also expended his skill on such things as muffs and other small articles of dress. Like Hollar, also, Bewick's skill seems to have been occasionally employed in the production of work of a strictly business nature; for the exhibition includes two bank-notes of North-country banks, engraved by him. He does not appear to have got through, however, anything like the enormous amount of work achieved by Hollar; and, on the other hand, he possessed powers of imagination and invention of which Hollar has left no indication. His head and tail pieces, by some of which he is most widely known, sufficiently indicate this. Small as they are, they exhibit humour, pathos, and a very close study and perception of human character, and of the action both of men and animals. There could not be a better illustration of this last quality than in the cut in which a mastiff is about to fly at the throat of a man: the energy of the dog is quite alarming, and the action of the man holding his stick with both hands across his chest as a bar to protect his throat, is just as real and natural. Another remarkably good one is that of a pack of boys run away with in a cart, the horse of which has started off, reins on neck, while left alone by the carter, who is running after him; the helpless condition of the occupants of the cart, holding on to its front and sides (one having been already thrown out), is most amusing; and we can fancy that such sketches are merely the transfer to paper of incidents witnessed by the artist in his Northumbrian village.

The comparison of the water-colour studies with the engravings in nearly all of this class of pieces is very much in favour of the engravings. In fact, in these cases the drawings are almost obviously finished just sufficiently to afford a good copy to work from, and many details in the engravings are not in the originals. In most cases the sketches have been copied the direct way on the blocks, and the impressions are therefore the reverse way. There are certain things which Bewick is not very successful with in the drawings, and sometimes in the engravings also; for instance, his drawing of water is mannered and deficient in variety. In one subject, representing a man fishing in the middle of a stream, it is curious that in both the original sketch and the engraving occurs the same oversight; the reflection of the figure, which is swayed rather to one side in attitude, is continued in the same line in the water instead of being reversed. It may, perhaps, be said that in the matter of reflections in water it is more often possible to catch good artists tripping than in anything else in nature. In looking

over the collection one cannot but note the rather frequent recurrence of snow pieces. In one of these, which are all beautiful in their way, it is noticeable (in the one numbered 50) how delicately the effect of the shadow on one side of the furrows of a snow-covered field is given; you can see that it is shadow on snow. The serious moral element in many of these little pieces,—serious in intent even when half-comic in expression, is of course not to be overlooked; among the most noteworthy examples are the wooden-legged soldier shaking hands with his old friend the bricklayer, whom he finds still whole and hearty in his native village to which he has returned aged and maimed (Bewick was a strong anti-"Jingo"); and in a more satirical vein the sketch representing the devil swinging himself easily on a gallows and contemplating the church in the distance.

In the case of the bird subjects, the original drawings are much more elaborate and highly finished than those of the imaginary pieces, for obvious reasons. These were accurate realistic studies, made as guides to the engraving of subjects which could not be kept long enough to serve as direct models for the lengthy process of cutting the block. In some few cases the coloured drawings are superior to the engravings, but not often; when the engravings are inferior in one point they often show superiority in another. Bewick's power and finish in the use of colour are however remarkably exemplified in many of these water-colour drawings of birds, and as these, of course, are not familiarly or generally known, they add very largely indeed to the interest of the exhibition. In the engravings, as many of our readers know well, the most remarkable characteristic is the softness and delicacy with which the texture of feathers, and their manner of growth, are represented, sometimes in a manner which seems to an ordinary eye quite incompatible with the stubborn and mechanical process of wood engraving. And in fact these works do represent what is very exceptional in the art, and what it would be impossible to get now, the characteristic touch of a master who gave a meaning to every stroke, and did everything (in his best works, at all events) with his own hand and eye. Wood engraving has become so comparatively mechanical now, that this delicacy of touch and style is not to be had at any price; the artist who might have engraved in this style in Bewick's day would now give himself to etching, and in all probability Bewick himself would have been an etcher had he lived in our day. Wood-engraving has, owing to great demand, sunk into a kind of popular art supplying reproductions speedily for popular taste; and the result is, that the highest class of artists who deal in reproducing processes at all have come to think lightly of engraving, and to make it a point of honour to give the first place to the needle and the copper as the only reproducing process worth the attention of an artist of the higher class. This is in some sense a very undesirable conclusion. Wood-engraving is a type of work much more easily reproduced and multiplied than etching, and is, *pro tanto*, the more valuable, if it be thorough individual artist's work in the first instance. And Bewick's wood engraving is so. No one could pretend to place the value of these engravings lower, in an artistic point of view, than it could be if they were etchings, and their practical value is greater. The impressions from them have been more numerous and more perfect than etchings on copper could have furnished. The difference is, that artistic work on wood is more laborious, and claims more time and pains from the artist, than the freer method on copper. But Bewick's engravings prove that the artist's feeling and touch may show itself on wood as perfectly as on copper, granted that the artist is willing to bestow the labour. Let him be willing to do so, and wood-engraving takes its old place as one of the finest of the reproducing forms of artistic work. That is the lesson we read in Bewick's engravings.

A Testimonial consisting of a centre ornament in silver, two dessert stands and salver, was presented on the 16th inst. to Mr. Thomas Hawksley, C.E., F.R.S., by the directors of the Nottingham Waterworks Company, in acknowledgment of his services as their Engineer-in-Chief, from the commencement of the undertaking, A.D. 1830, to the dissolution of the company, A.D. 1880 (a period of fifty years). The testimonial was designed and executed by Messrs. Hunt & Roskell.

DEPUTATION TO THE ADMINISTRATION ON THE FLOODS.

THE FIRST PRACTICAL STEP TO BE TAKEN.

THE large and influential deputation which, on the 12th current, had an interview with the Chairman of the Local Government Board on the subject of the recent floods, was an example of a non-political public movement of no small importance. It is needless to say how thoroughly we sympathise with the object of the deputation, and with the appropriate tone in which Mr. Dodson replied to their remarks. The subject of the interview, as our readers are aware, is one to which, from the very first installation of the Local Government Board, we have not ceased, as occasion arose, to call the attention of the Government and of the public. On the present occasion, men of the highest position, as territorial landowners, and as public men, spoke of the enormous damage which, with much other waste of public money, might have been altogether averted, if our representations as to the primary need of a hydrographic survey of England had received the attention which we venture to say they deserved.

The Duke of Bedford, whose very name suggests the honourable association of the former members of his house with the great work of reclaiming the fens, introduced the deputation. The Speaker of the House of Commons, as member for Cambridgeshire, said that the question "was not only one affecting Cambridgeshire and the Levels, but that the rivers of every watershed throughout the kingdom are interested in the matter." Mr. Magniac, M.P., speaking as representing the town of Bedford and the County of Bedfordshire, "knew of tens of thousands of acres that were practically under water. One farmer he knew had not seen a large portion of his farm for two years, though he had to pay rent for it." The removal of mills, Mr. Magniac thought, would be a great benefit to all around. Mr. Palmer, Q.C., M.P. for Lincoln, said that district had suffered more than almost any other place in the country. Mr. Cope, of Huntingdon, spoke of the ravages committed by the Ouse for the last three years. In this valley alone the keep of 30,000 cattle had been destroyed, and the fertility of the soil permanently deteriorated. The death-rate had nearly doubled in the town of Huntingdon, and in the surrounding villages many persons had been obliged to live all the summer in the upper rooms of their houses, to which they obtained access only by boats. The Marquis of Huntly suggested the vesting the control of the watershed of rivers in one managing body. The Earl of Jersey called attention to the floods of the Thames. Other gentlemen spoke of the inability of the inhabitants of any of the districts affected to protect themselves, unless provision was made by new legislation for the comprehensive treatment of each watershed taken as a whole. We cordially endorse every word above cited.

Mr. Dodson, in reply, expressed his entire agreement with the sentiments expressed by the deputation. He commented with satisfaction on the general accord in the view that the inhabitants of the various districts would be prepared locally to effect the regulation of the river courses, if they were authorised so to do, by a measure which would treat each river system as a unity, and spread the cost duly over the whole area affected. He also collected from the deputation that the increase of land-drainage was one of the causes to which the more destructive nature of floods was to be attributed, and promised to lay the whole matter before his colleagues. The speech of the right honourable gentleman was manly, statesmanlike, and to the point.

There are three highly important matters bearing on this difficult subject which were not touched either by the speakers or the President of the Local Government Board. The first is that the recent increase of damage from floods is not peculiar to England. It has been felt, and that most disastrously, in France, in Italy, in Hungary, and elsewhere. The Rhone, the Po, the Tiber, the Seine, the Danube, and other great rivers, have spread desolation over their banks. But the Governments of France, of Italy, and of Austria, have seen the threatened extent of the evil, and the responsibility under which they lay to meet it. In every case they have called in the best services of the most eminent men. They have named technical commissions; they have obtained exact hydrographic surveys of the river courses; and they have adopted well-considered measures for the protection of the country. Great works have been executed, others are in progress, or under consideration. In each of these countries the engineer has been set to work by the Government to protect the country.

The second point (which compared to the others is almost a bye) is, that although the draining of land tends to bring down the floods more rapidly than heretofore, the volume of water that is carried down is more increased by the destruction of timber and cover of all kinds than by any other cause. When the hills have been stripped of trees, what were formerly beneficial rivulets, of constant flow, are converted into destructive torrents, dry as soon as they have ceased to do damage. It may be difficult to point, in this country, to wholesale destruction of cover such as is to be seen on the slopes of the Apennines, but the steady warfare which the farmer has been lately taught to wage against hedge-rows, coppices, standing timber, and wood of all kinds, is to a great extent a cause of destructive flood. In a properly-sheltered and partly-wooded district the effect of vegetation on the rain is threefold. It entangles it in its fall, absorbing a considerable portion, and converting it into vegetable tissue; it evaporates a much larger portion from the enormous evaporative surface of branches and leaves; and it retains yet another portion, until it sinks into the soil (instead of at once running off the surface), by the entanglement of roots, stems, and moss. By this compound action, every tree and every hedge is a storm regulator. By cutting these down, and exposing enormous areas of undivided arable land, to sun and wind, the hygrometric character of the climate is changed, the permanently productive character of the soil is injured, and the floods are doubled or trebled, not so much in velocity as in volume. Any one who doubts this should read the reports addressed on the subject to the various Ministers of Public Works of the Governments we have cited.

Thirdly and lastly, and quite independent of any legislation as to water-shed boards (desirable as such a measure is), the first, foremost, and *sine qud non* condition of any effective action in the matter is a HYDROGRAPHIC SURVEY. Have we any need, after citing the remarks of the deputation, to reproduce our former arguments on this score? Can there be a moment's doubt about it? Are we to remain the only people in civilised Europe among whom, if a question is asked as to the volume of any of our rivers, the only reply that can be given is, "It is unknown"? Such is now the case; and whether commenced by Government as a necessary part of the Ordnance Survey, or whether inaugurated in detail, water-shed by water-shed, such a Survey is necessarily the first step to be taken to prevent floods. The deputation do not seem to have been accompanied by an engineer; but we cannot doubt that men of their eminence,—peers, members of the House of Commons, and large proprietors,—can only need to have this fact called to their attention to see that the Survey must be the first step to dealing with the floods.

THE PLUMB-RULE AND LEVEL, AND THEIR LESSONS.

IN a preceding issue we gave a brief description of an improved plumb-rule, the invention of a building workman, and we hope that the instrument will be found generally useful; for there has been for centuries a need for the introduction of a compact, correct, and more ready instrument than the one in use. The plumb-rule, in its true construction, application, and proof, has furnished more than once a theme for a technical lesson or lessons in technical education for workmen in the columns of the *Builder*. One or two instances, among others, may be worth recalling. In 1871 the present writer published a sketch in these pages, entitled "How do you Prove your Plumb-rule? A Technical Lesson," which elicited other articles and communications from artisans and others on the "Technical Education of Workmen," some of them bearing directly on the plumb-rule and geometrical lessons involved in the application of workmen's tools. One of the most interesting of these communications was from the pen of poor "Jack Plane" (the late Mr. Randall), who died shortly afterwards through an unfortunate accident met in pursuit of his trade. The *nom de plume*, "Jack Plane," often occurred in

these pages previously to the date of his decease, and it were to be wished that we had in our midst many such intelligent and practical-minded working-men as the carpenter contributor of the *Builder*. "Jack Plane" well knew that every stroke the carpenter and the joiner take at their work is either a line, a square, or a circle, and that their daily labour is with the rule, the square, and compasses. Consequently, every part of their work is a lesson in geometry demonstrated before their eyes, and yet many of them remain unconscious of the facts or incapable of properly understanding them.

Now, the plumb-rule is a very simple instrument, and any man that ever handled a saw or a plane without being a mechanic considers himself capable of making one. Indeed, building workmen themselves think little time or care is necessary to construct one, so they are often constructed accordingly, and proved in rule-of-thumb manner. They vary in length and breadth, and betimes in thickness of scantling, according to the work they are intended for, or the usage they may be or are likely to be subjected to. Some workmen take a little pains in making one, and finishing it with a little taste, and with certain adjuncts when they intend the plumb-rule to last more than for a temporary job. A plumb-rule as ordinarily made, say, is a piece of a deal or pine leaf from three to four or more feet long, and from five to six or more inches wide. It has a pencil or otherwise a cutting gauge-line down the centre of its width, and three saw kerfs or notches in its top end, the middle one being in a line with the string-line, and those on either side, which are cut mostly oblique, being intended for fastening purposes, when there is an overplus of bob-line, the overlength being pressed into these side notches once or twice, and should any small overlength remain after adjustment it is allowed to drop behind. On the face of the plumb-rule, near the bottom, and centrally, a hole is cut of an egg-oval shape, for the play of the leaden "bob," which latter is about the size of, a hen's egg, but rather more pointed on its top side. In a proper plumb-rule the string is made to pass directly through the elongated thickness of the "bob," and knotted at the bottom. On the face of some plumb-rules, immediately above the "bob"-hole, a fence is placed of a segment or looped shape, intended to confine the string and bob within reasonable limits and render it the sooner adjustable when required; for what is technically known as "killing the bob," or bringing the bob to hang without swinging or swaying more than is needed, has to be resorted to by the adjusting hand of the operator. To the uninitiated our description of an ordinary plumb-rule may appear somewhat complex, and it may be thought that the surroundings of the instrument are not so very simple after all, but the sight of the instrument itself ready for use, or in use, will at once show that the instrument is simplicity itself, as far as its construction and application are concerned. The defects of the ordinary plumb-rule are chiefly those connected with the attaching string, which twists in wet weather and breaks in dry, though in dry and wet, when used in outside building work, there is a constant wear and tear through fraying and unravelling, which, independently of breaking, renders a new string often necessary. It might be thought that the ordinary defects of the plumb-rule would have long since prompted some building workman to invent a new form of instrument, but the immemorial one being so readily constructed, and costing so little, and being at the same time so approximately accurate for all the practical purposes of building, workmen have gone on contentedly using it, never dreaming of, or perhaps seldom or never wishing for, a better instrument. We ourselves suggested several years ago the construction of a somewhat similar plumb-rule to that now introduced by Mr. Ryan, a weighted metal rod, hung in pendulum fashion, fixed in a groove or slit centrally on the broad face of the plumb-rule. But it did not take practical form. Many other matters since have occurred, knocking states and buildings out of perpendicular, and we have been obliged to move on with the instruments to our hands.

In making a wooden level or levelling instrument, the building operative proceeds on similar lines to those adopted by him with the plumb-rule; for the level in form is in part a plain rule, with its string and bob, though it cannot, as made, be applied in a perpendicular direction. Bricklayers and stonemasons, and often carpenters and joiners, for levelling purposes, use the spirit-level made to varying sizes. This instrument, of the size that is generally used and carried by workmen in their tool-baskets, is useful for short lengths of work, but over a long range, a good-sized accurate wooden building level is a safer instrument. A certain stone tested by a short spirit instrument may appear level while a course of three or more, a whole course may dip or have a rise at either end. In plumbing, the face of a wall, brick or stone, a rather longer plumb-rule should be preferred than a short one, even though it should not be so handy for the workman. Hundreds of houses are yearly built which are not truly perpendicular or plumb in their fronts; and when a row of speculative houses is built, the front walls are the only part to which the hurry-scurry or scamping workmen pay any attention as regards an approach to fair plumbing. Let any one with a good pair of eyes accustomed to look at frames, door-joints, openings, or walls "out of winding," walk into the suburbs, and make a perambulation of some of our sundry new streets daily cropping up. Let him use his eyes, or even one of them, by standing close to the buildings, or at the gable-end of one commencing the row. Illustrations of bad plumbing, and consequently bad workmanship (and materials too) will be plentiful. Front walls bulging in their centre, overhanging some inches atop, or undulating several times in their height,—the result of plumbing with a vengeance, and scamping on even worse grounds. Fractures or settlements in the brickwork of the suburban houses will be found in abundance, and though not all the direct consequence of bad plumbing and levelling, yet both are contributories to the results. A wall built with bad materials, particularly bad mortar, if built perfectly plumb, will have the better chance of standing than one that overhangs or undulates; but scamping builders are partial to an inland batter in wall-building as well as in scaffolding, for very obvious and cogent reasons. If some of the scamping builders of the present or last generation had been hung plumb as an example of equitable State handiwork, their successors would be acting more uprightly to-day, and building more perpendicularly. The men that "run up" in this world find their level at last.

Reverting to the plumb-rule and level, it may be noticed that the spirit level has been applied before now, but the arrangement has not come into use.

We want thinking workmen as well as working machines. A machine may work ordinarily well, but it will never put thought and expression into the work it executes, though it is in itself the outcome of deep and prolonged thought and experiment. Long since we have shown in these pages how the workman can prove his ordinarily-made plumb-rule, and yet how few operatives have learned to do so by any other method than "rule of thumb," despite the advance of, or the agitation for, the technical education of the workman. The carpenter's or building workman's square and mitre jack are constantly-used instruments in our building workshops, and yet many of their users are ignorant of the angle they geometrically form. The three common angles of 45°, 60°, and 90° often occur or are always occurring in building operations, yet there are hundreds of workmen who would be unable at a moment's notice to tell what parts of a circle these angles represent. Worthy "Jack Plane," in the *Builder* nearly a decade since, confessed from his own wide experience at that time of his fellow workmen that, although the mitre was in common use, not one workman in twenty knew that the angle of 45° was a true mitre. A number of his fellow workmen were equally ignorant of striking a "bob" hole, and did not know there was a correct method for describing the egg oval that constituted it. How much have our building workmen, as a general body, advanced since then in technical knowledge and its application to the true performance of their work? If there has, as we fear, been little appreciable advance, is it not time for the credit of the country that the movement for the supply of this urgent want should be at once expedited?

Sanitary Science and Civil Architecture.—At the next meeting of the Royal Institute of British Architects, to be held on the 29th inst., a paper will be read on "Sanitary Science in its Relation to Civil Architecture," by Mr. E. C. Robins, F.S.A.

THE WASTE LANDS OF ITALY AND OF IRELAND.

THERE is one portion of the area of Europe that is more desolate than the bogs of Connaught. It is found in the midst of the garden of the West, and in the immediate vicinity of the seat of the ancient capital of the world. Few things are more striking to a stranger than the abrupt and dismal contrast which is presented by those portions of Italy which are afflicted by malaria, and the laughing cultivation of such districts as *Campania Felix*, or the vineyards and olive forests of the Adriatic seaboard.

The causes of this desolation, and the means to be adopted for the reclamation of such fever-smitten spots as the *Campagna di Roma*, have long been matters of anxious discussion among the statesmen of Italy. Without at once entering into the thorny questions of the spongy nature of the soil, which some persons declare to be incapable of drainage, of the influence of level, and of geological depression; or of the effect of mis-government in past time in robbing the land of its natural cultivators, it may be interesting to see what the Italian Government is now practically attempting in the matter. The parallelism between this "squalid desert," and some of that waste land in Ireland which the bishops of the Romish Church desire to see restored to cultivation, is so close as to be not a little instructive.

Under the provisions of a recent law, the Italian Minister of Public Works nominated a technical commission for the purpose of investigating the subject of the reclamation of the *Agro Romano*. The Commission has recently sent in its report. It was the unanimous opinion of the Commissioners that it was impossible to restore the squalid desert, as they term it, of the *Campagna* to a healthy condition, except under the influence of cultivation. As to the details of the mode of culture they declined to express any opinion, further than that it was necessary to encourage the stalling of oxen on the territory for the sake of the manure. But as to the aid which the Government, at no permanent cost to the State, could afford towards the reclamation of the waste, their recommendations were practical and business-like.

The Commission recommend the establishment of four village centres of population, at a distance of about six miles from Rome, and on the lines of the Civita Vecchia, the Naples, and the Orte railways, and the Tivoli tramway. In each of these localities they propose that the proprietors of the land should be asked to place about 1,500 acres at the disposal of the Government for purposes of cultivation. No inducement is mentioned in the report for this patriotic act, but it may be supposed that the improvement of the soil is intended to cover some rent to the owner. On this point it would be desirable, however, to have something more definite. In the centre of each of these districts the Government is recommended to buy enough land to give room for the building of a village that would hold from 4,000 to 5,000 inhabitants. Roads are to be made and drained by the Government, to the site of new villages, and the land surrounding them is also to be reclaimed and drained in the most efficient manner.

Starting with 200 families to one village, the Government is to advance to the new colonists the money necessary to build their habitations, and to break up the soil for cultivation. A low rent, paid in kind, as a fixed proportion of the annual produce, is looked to as the means of reimbursing the outlay of the State. For the houses, they are to be leased to the builders, the rent being enough to pay interest and sinking fund on the capital advanced, and on the share of the cost of roads and drainage due to each house. By this means, at a fixed time, the houses will become the absolute property of the builders, the State in this case acting somewhat the part of a building society in this country. In case of the refusal of the proprietors to allow their lands to be occupied, they are to be purchased by the Government, and gradually redeemed, in the same way as the houses, so as to become the property of the cultivators.

While it is thus proposed to extend cultivated zones of land step by step into the Campagna, it is proposed, by way of rendering the advance of cultivation more easy, that the present unrestricted right of freedom for semi-wild oxen should be restricted; and that those proprietors who now cultivate any part of the district should be compelled to build healthy abodes for their work-

people. For this purpose, as well as for that of building cattle-sheds, the Commission propose that the Government should advance the money on loans similar to those offered to the settler in the new agricultural villages.

The ruling idea of the plan is, the inverention of the Government as the provider of temporary assistance, at no ultimate cost to the State. How far the invited colonists are likely to be forthcoming, on these terms, it is not intimated. The question, indeed, is probably one only to be decided by experience. It is very well for the Commission to steer clear of details, and to mention in the most casual manner the preliminary making good of the land by the best methods. It is here that the shoe pinches. If preliminary drainage will so far exterminate the malaria as to make the sites of the new villages only moderately healthy, there can be little doubt that immigrants would be only too eager. As to that, the report is silent. Nor do we suppose that there is any professional man who knows the locality, who would be willing to peril his reputation by predicting the effects of the first process of "*bonificazione*."

ARTISANS' WAGES ON THE CONTINENT.

An inquiry has been recently set on foot by the Industrial Society of Mülhouse as to the condition of wages in Alsace and the neighbouring provinces, principally affecting, as is natural, the textile trades, but extending also to other collateral trades. The cotton wages are below those of England or America; but it is somewhat singular that they show little or no fluctuation; though, on the other hand, the tendency is to steadily increase. Wages in textiles seldom dance up and down during the year on the Continent as they do in England, but they also have the advantage (for the operative) of seldom or never retrograding. At the commencement of the present century, when cotton was still spun by hand, a woman earned about 40 centimes (4d.) a day; at the present time the Alsace spinner (male) earns 3 fr. 50 c. to 4 fr. 50 c. (2s. 6d. to 3s. 4d.) per day, while the woman makes 1 fr. 50 c. to 2 fr. 50 c. Old records, dating from 1606, state that at that period 12 deniers, equal to about 3½d., was the price for spinning a kilogramme (2 lb.) of cotton by hand; 100 years later the payment for spinning the same quantity of flax was 7d. The Strasburg weavers of 1646 used to get a haller and a half for an ell of cloth for a dress, which was at the rate of about 1½d. per yard. Some old documents in the Convent of Unterlinden, at Colmar, show that the price of manufacturing a yard of linen in 1710 was from 1½d. to 2½d.; while now the same quantity costs 9d. The following short *résumé* of daily wages in francs at the present time paid in the cotton trade of Alsace, the Vosges, and Normandy will be of some interest:—

	Alsace.	Vosges.	Normandy.
	fr. c. fr. c.	fr. c. fr. c.	fr. c. fr. c.
Carders	2 80 to 2 75	3 25 to 3 75	3 50 to 4 0
Combers	1 40 to 2 0		
Drawers	1 30 to 2 0	1 75 to 2 25	2 20 to 2 50
Rovers	1 20 to 1 25	1 80 to 2 50	2 0 to 4 0
Bobbin Winders and Piecers...	1 0 to 1 50	0 90 to 1 25	1 0 to 1 75
Spinners	3 50 to 4 50	3 75 to 4 20	4 0 to 5 0

It will be seen from this table that textile wages are by no means uniform even in the same country (considering, for the nonce, Alsace as still French), the scale being higher in Normandy than in either of the other two districts. The general rate of pay, both in Germany and Switzerland, is still less. It is stated that in Alsace the manufacturers complain very much of the difficulty of obtaining sufficient number of children to act as bobbin-winders and piecers, in consequence of the dislike of the country people to send their boys and girls into the factories. Generally speaking, it may be said that wages in the cotton-mills of Lancashire are nearly 50 per cent. higher than at Mülhouse, added to which there is a great difference in the duration of the hours of labour, the week's work in England being fifty-six hours, while at Colmar and Mülhouse it consists of eleven or twelve hours a day, and in certain districts of the Vosges, of thirteen to fourteen hours a day. In some of the better regulated mills, however, such as those of M. Dollfus at Dornach and M. Herzog at Logelbach, it has been recognised that the hands engaged in the production of fine cotton and muslin goods turn out as much work in eleven hours as they used to do in twelve, the attention being better concentrated,—and it is a regular arrangement for the women to leave the mill for half an hour or an hour in the morning so as to allow them to prepare the mid-day family meal. Throughout other branches of textile trades, there is not very much uniformity on the Continent, wages differing very much according to the place. The linen-weavers at Colmar earn about 2 fr. to 3 fr. 50 c. per day for men, and 1 fr. 25 c. to 2 fr. 50 c. for women. In the woollen (merino) factories at Buhl, the women get 2 fr. to 2 fr. 50 c., the men 3 fr. 50 c. In the cloth-mills at Bischwiller, wages are not so high, having, in point of fact, been declining ever since the annexation to Germany. This branch, however, is the only one in the textiles in which there has not been a steady advance. Bleachers can earn 2 fr. 50 c. for a day of eleven hours; women, 1 fr. 75 c.; boys, fifteen to eighteen years old, 1 fr. 80 c.; and girls 1 fr. 40 c.

Turning to other trades, we find varying degrees of earnings, according to the place or the skill of the workmen. The chemical workers and starch-makers at Thann, Strasburg, and Colmar make about 2·75 to 3 francs per day, while in the paper-mills at Rixheim and Turkheim (where wall-papers are made) the wages for machinists, printers, and engravers are 3·60 to 5 francs; ordinary workmen, 2·50; women, 1·50; children, from 1 to 1·25. The Strasburg tanners earn 3·25 francs a day, whereas in 1850 they could only make 2·25. The glass-workers at Wildenstein get from 2·50 to 4, and the boys have 1·25, being an increase of about 25 per cent. in the last fifty years. Strasburg brewers earn from 4 to 4·50 f. a day, together with an allowance of beer. In the tobacco warehouses, foremen and overlookers are paid 6 to 7·50 f. per day; workmen, 2·75 to 4; women 1·75 to 2·50. In the printing trade at Strasburg the wages for machine-men are 15 to 35 francs per week; compositors 20 to 34 (generally piece-work); layers on, 4 to 16; binders, 10 to 36; girls employed in folding, 4 to 12 francs. In fitting and engineering shops, wages are singularly low, averaging 3·70 per day at Mülhouse, and 3·80 at Grafenstadt, a decline from the wages of 1878, which then reached 5 to 8 francs. But in certain mechanical trades connected with the textiles, such as engraving on metal for patterned cloths, the skilled hands can earn 12 francs a day. Work is, however, somewhat unsteady in this trade, sometimes there being none, while at other times there is a considerable rush of orders. Fitters and machinists make about 29 francs in the fortnight, or 2·40 per day; adjusters, 42 to 60, or 4·15 per day; turners and smiths, 54 to 57, or 4·65 per day; strikers, 2·90; coppersmiths, 5·25; tinsmiths, 4·25; saddlers, 3·50; carpenters, 4; joiners, 3·10; masons, 3·50; masons' labourers, 2·40; foremen masons, 30 francs the week; foremen joiners, 43; foremen mechanics, 55. As a general rule, wages in country places are lower than those of the towns; but, on the other hand, the artisan has very often some counterbalance in the shape of a little bit of garden or land, which he himself knows how to turn to some profit. Wages often vary according to the cheapness or dearness of living in the neighbourhood, as for instance in Normandy, where provisions are dearer than they are in Alsace and the Vosges. One cause of this is probably the proximity of Normandy to England, and the readiness with which Normandy farmers can find a better market there for their agricultural produce than they can at home.

THE NORTHERN IRON TRADE.

Alike in respect of the extent of production and of price, the condition of the iron trade of the North is, in all its branches, very greatly improved from those it knew a year ago, though the full extent of the first force of the revival has not been maintained. But when it is known that in the crude iron branch of the trade there were in September, 1879, only 80 furnaces in blast in the Cleveland and Durham district, and there are now 117; that the output of the furnaces last year was at the rate of 4,800 tons daily for the whole of the district; and that it is now at the rate of 7,000 tons daily, and the change in the extent in the production is at once apparent,—a change which has called into use a very large amount of labour, for which a year ago extra-parochial assistance was needed; and a large amount of capital, the works representing which last year were unproductive and wasting. That enlarged production was in response to an increase of the demand, and though one branch of the demand has for the time collapsed, yet the effect of the general enlargement is seen in the fact that the stocks of pig iron in the hands of the makers is considerably less than it was a year ago. It is evident, therefore, that large as has been the production over that period, the sales of crude iron have been still larger. But whilst the increase in the production has been chiefly noticeable in the latter portion of the time, that increase in the demand which has stimulated it was shown most markedly at the earlier part of the period; and thus it is that though stocks are less now than they were a year or so ago, they are in excess of what they were at the middle part of the year. Without there should be an early increase in the demand, it must be concluded that the output is in excess of it,—in which case increased stocks, weaker markets, and falling prices would be early characteristics of the trade in the Cleveland and Durham district; for that district is largely dependent upon the demand for crude iron from other manufacturing centres, about one-half of the total production being sold in the shape of pig iron to other home and foreign manufacturing centres.

But what must be considered the decline in recent months in the demand for the cheap crude iron of Cleveland, has not yet been accompanied by any falling off in the demand for the local manufactures from that iron. The chief of these is now that for iron for shipbuilding purposes; and whilst a year ago the associated makers of Durham and the North of England sold on an average 20,000 tons of plates and angles monthly, they now sell about 34,000 tons monthly; and this increase of 14,000 tons in the monthly sales has been accompanied by an equally satisfactory increase in the average realised price,—in the case of plates, the chief part of the trade, from 5*l.* 10*s.* per ton to 6*l.* 13*s.*; and in the case of angles from 5*l.* per ton to 5*l.* 19*s.* per ton. The satisfactory enlargement of the volume of trade has called into operation a large number of the rolling-mills in Durham that have long been idle; and the increase of the average price has, under the sliding-scale regulation in force, given a slight but acceptable addition to the wages of the workmen employed in the manufactured iron trade of the North of England, so that there has been, and yet remains, a substantial and general increase in this branch of the metallurgical industries of the North of England. With the increased consumption of pig iron locally necessitated, there is a fuller employment in contributory industries; in the iron and coal mines, in the carrying industries, and in others which share in the results. The whole trade of the North of England is, indeed, changed in the course of the year, and though the cause of the primal stimulus has passed away for the present,—the demand for crude iron for the United States,—yet the effects in great part remain; and there is a partially counterbalancing growth in the enlarged demand for pig iron for the Continent. Partial progress has been made in the district, it may be added, with the erection of works in different parts capable of meeting the growing demand for steel for various constructive purposes, and these works, in at least one important centre, will be for the use of the native iron in that manufacture.

At the present time the tendency of the trade in the North of England is not so markedly progressive as it was. Although the number of furnaces in blast is sixteen less than it was in 1873, yet, owing to regular working, and to the use of large furnaces, the present production of iron is at its maximum. We have seen that it is at the present time above a demand which shows a declension, if a temporary one. Whether or not the demand will rise now that prices of pig-iron are so very low, and that rates of freight are also low, cannot be foretold. There have been inquiries for crude iron for the United States, and one or two small lots have been shipped from South Durham to America, but there is as yet no sign of a demand to anything like the extent that was known a year ago. From the Continent and from other home consuming districts there is a steady demand, whilst that for the local malleable iron trade is about at its largest for some years, and has, with the briskness in the shipbuilding trade, the indication of continued and even increased demand. And the change in the steel manufactures,—the proved success of the Thomas-Gilchrist process

—will stimulate the demand for cheap crude iron,—such as that of Cleveland. For the past two or three years there have been immense importations of Spanish and other foreign iron ores into the northern district, chiefly for use in the steel manufacture. The use of Cleveland iron may now be expected not only to grow, but to become slowly substitutional for those rich ores of Spain; and from all these sources it may be concluded that there is a probability of greater demand being known for pig-iron. In the manufactured iron trade the greatest animation is in the branches for the production of shipbuilding, and from the number of vessels on the stocks of the shipyards, and on the order books of the builders, the animation must for some time continue. The question of price is rather different, for it must be concluded that the facilities of production have become operative, rather preceding than following an increased demand. As this is the case, prices have weakened of late for all classes of iron, and till the conditions of demand and supply are changed that weakness will continue. But though prices are low, there is a counterbalancing lowness of the prices of raw materials, and thus the iron trade of the north may be said to be profitable at the present time. That in favoured instances this is eminently the case is proved by the fact that the largest Durham ironmaking company, —the Consett Iron Company,—has paid for its past year the large dividend of 20 per cent., whilst others not quite so favourably circumstanced have paid smaller but still substantial dividends. With a profitable trade, and one that seems to have the elements of growth, the iron manufacture of the North needs only to keep its production regulated by the fluctuating demand, to be ready in every way to share in the renewed period of prosperity that seems likely to dawn on the iron trade when nations are recuperated by economy and by the blessing of abundant harvests.

BARRACKS: THEIR PLANNING AND CONSTRUCTION.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the second ordinary general meeting of this Institute for the present session, Professor T. Hayter Lewis, vice-president, in the chair, the secretary announced the decease, on the 30th ult., of Mr. E. M. J. Forster, Associate.

Mr. E. Ingress Bell (of the War Office), Associate, then read a paper on "The Modern Barrack, its Plan and Construction." The author commenced by a reference to the power conferred by the "Military Forces Localisation Act" of 1872, for building barracks and otherwise effecting the localisation of the home forces. It was desired to maintain the permanent identification of particular regiments with particular localities. Since the passing of the Act old barracks had been enlarged or new ones built at fifty-four different stations in the United Kingdom, accommodating a total force of 12,000 men, and costing no less than two and a half millions sterling, exclusive of the land upon which they stand. He then dealt with the great barrack-building movement which marked the close of the last century,—using the defects of the system then inaugurated as a scale by which to test the improvements exhibited by the barracks of the present day. He dwelt upon the unvarying ugliness of the typical barrack of the last century, and traced the causes of its defective plan to the circumstances under which it was built. After the establishment of the army on a legal footing, at the Restoration, no barracks were built with the exception of those at Whitehall for the Horse and Foot Guards, and a few in Scotland. The reason was the antipathy of the nation to a standing army, and the consequent repugnance of the Parliament to vote the required funds. Meanwhile the army increased in numbers, and suffered in health from exposure and privation. The mortality amongst the troops was so alarming that various expedients were adopted; but still barracks were refused. Even so late as 1766, Blackstone wrote:—"Nothing should be more guarded against in a free community than making the military form a body distinct from the people. The soldiers should be intermixed with the people. No barracks should be allowed." The crowning objection to their erection was the use to which they had been put in Ireland. At length it became essential that some recognised plan for housing the troops should be adopted, and in the latter part of the century Mr. Pitt proposed a measure for building the necessary barracks. An enormous number of barracks was commenced simultaneously all over the country; they were based on one defective and hastily-considered model, and to that period (1793-97) we owed the dreary pile whose very name had become a synonym for ugliness and which was seen in most of our more important towns. The first step to systematise the construction of barracks on a better plan was taken at the close of the Crimean war. Committees and Royal Commissions under the auspices of Lords Panmure and Herbert inquired into and reported upon the condition of every barrack in the United Kingdom; and long and sad was the list of their shortcomings. The architectural profession was invited to compete for the erection of an infantry and a cavalry barrack. Those at Chelsea and at Knightsbridge were the indirect result; but in both cases the competition plans were set aside and the actual plans of the buildings, though not the elevations, were designed by the authorities at the War Office. The defects of the old system were due to complicated planning; overcrowding on the ground; buildings interfering with the ventilation of one another, containing too many rooms and too great a number of stories, built round enclosed courts, or too near boundary-walls; and to defective sanitation in all its branches. It was found that the excessive mortality amongst the troops,—no less than twice that of the civil population,—was traceable to specific diseases directly induced by the unhealthiness of barrack-rooms, by want of ventilation, by defective water-supply and sewerage.* The result was the promulgation of a series of recommendations:—(1) Prescribing the superficial and cubical space to be allotted to each man; (2) abolishing the old offensive urine-tubs from the barrack-rooms; (3) providing separate quarters for married men, baths, washing establishments, workshops, reading and recreation rooms, skittle-alleys, &c.; (4) regulating the warming, ventilation, water-supply, and drainage. The regulations which followed were directed to an improvement of the general system of barrack plan, and to the proper remedy for each particular defect in construction, warming, ventilating, &c. Consequently, at the present day, there is no one of her Majesty's subjects who is more scientifically provided for in all that conduces to health and physical well-being than the common soldier. The type of barrack which was accepted in the eighteenth century was exhibited in the plans of a vast unexecuted project for Hyde Park, and the want of provision for the decencies and necessities of barrack life was shown therein. The difficulties of acquiring, at reasonable rates, sites for Government buildings having been touched upon, Mr. Bell adverted to the conditions necessary to be observed in the disposition of the barracks as a whole, namely:—The want of a clear space around the barrack wall; of an ample parade-ground; the proper placing of the officers' quarters; the keep and store accommodation; guard-house; hospital; canteens; and the other items in a barrack establishment. The separate accommodation of each, and their proper mutual relation, were discussed and described in particular. The means of lighting and proportion of window space; the arrangements for warming and ventilating; the admission of fresh air and the extraction of foul air; the proportion of inlets and exits; and the special provisions and precautions rendered necessary by the habits of the soldier, were described. It was necessary that the soldier's rooms should be provided with indestructible fittings. With him valves were simply things to be fastened down, and ventilation openings only things to be stopped up. Long experience of his idiosyncrasies and of the exigencies of barrack occupation went to prove that of all methods of warming barrack-rooms that of the open fireplace was the best, and the best open fireplace was one perfected upon suggestions furnished by earlier models by Captain Galton. Under the old system fresh-air inlets were undreamt of, and the rooms were warmed at the expense of the purity of the air within them; under the new system the contrary, in some instances, had proved the case; and the rooms had been over-ventilated. It was easy to warm a room, equally easy to ventilate it, but not easy to both warm and ventilate it at the same time. The problem was no other than that of applying a constant system to varying atmospheric conditions, and all that could be looked for was a reasonable compromise, which experiment alone would dictate. Mr. Bell stated that a site for an ordinary barrack must comprise ten acres, exclusive of a training-ground and an encamping-ground for the militia. Instances were given of departure from the typical plan caused by special conditions of site, &c., and the scope left for ingenuity of planning in individual cases, notwithstanding the necessity for conforming to settled rules and principles, details of cost per man, and per cubic foot divided for the separate classes of buildings were given. Each barrack-room was designed to hold one-eighth part of the rank and file composing a brigade depôt, viz., twenty-eight men. 720 ft. of cubical space were allotted to each man. The married men had each a living-room, a bedroom, and a kitchen. The non-commissioned officers' quarters constituted a little club, furnished with comforts, aids to study, and means of wholesome recreation, for the like of which the city clerk scarcely knew where to look. The officers' quarters called for no special remark. The average cost per head of a barrack, in the latter part of the last century, was 12*l.*; the cost of the new Chelsea Barracks* was about 225*l.* per head, and of the Brigade Depôts 200*l.* per head. The improvements effected by somewhat similar means in the arrangement of stable buildings, the system of ventilation, of drainage, and other matters relating thereto, were explained. Cavalry stables were now arranged in two rows of stalls, the heads of the horses in each case being against an outer side wall. Every horse was allowed 1,200 cubical feet of space. A window was placed over every stall, and 8 ft. above the floor, and all the stable windows were made to open. When rooms were built over stables, foul-air shafts were carried up to above the roofs. These shafts had a sectional area of 18 in. per horse. The stalls were drained by surface channels only; these were carried to a distance of 12 ft. outside the stable. The loose boxes were 17 ft. by 12 ft. and 12 ft. high, allowing 2,500 cubical feet per horse. The parallel movement towards ameliorating the barracks of France, in which the English lead has been followed, and with due acknowledgments, was then described,—elucidated by the reports of M. Emile Trélat, and some useful and interesting extracts from the report were given in substance. The "Système Tollet," tried experimentally at Bourges, Macon, Autun, and elsewhere,—based mainly upon English experience, and found to be quite successful,—was referred to, and its main features were elucidated. In conclusion, an appeal as to the improved character of the exterior appearance of the modern barrack was made to new buildings at Inverness, Reading, and elsewhere. Some deductions from Government experience and investigation bearing upon the larger civil buildings, such as workhouses, model buildings, &c., were submitted to the members. The whole subject was fully illustrated by drawings of old barracks, and of barracks built, or building by the War Department, — drawings which were placed at the service of the author, together with other facilities, by the courtesy of the Secretary of State for War.

The following is a list of the various illustrations to which Mr. Bell referred, and which were exhibited during the evening:—Downpatrick New Brigade Depôt: hospital annexe; Inverness New Brigade Depôt: plans, &c.; Oxford New Brigade Depôt: officers' stables, perspective sketch of keep, &c.; Worcester New Brigade Depôt: block plan; Type for Keep of Brigade Depôts; detailed plan of a modern barrack-room; Knightsbridge New Barracks: plans and view;† The Horse Guards, Whitehall: historical chart;‡ Project for Barracks in Hyde Park (A.D. 1716): plans, &c.;§ The Old Palace in the Savoy as converted into Barracks (A.D. 1736): plans, &c.; Vienna New Barracks for

* More than twenty years ago we called attention to the manner in which our soldiers were being murdered by being "stowed away" without the slightest regard to sanitary considerations. In our volume for 1858, pp. 150, 170, we gave some illustrations of "interiors" in the Portman-street Barracks (now removed) and in the old cavalry barracks at Knightsbridge.—Ed.

* A plan of the quarters for one company of Infantry in these barracks (Mr. George Morgan, architect), was published in vol. xiv. (1856) of the *Builder*, p. 160.

† Views and block plan of the new Knightsbridge Barracks were published in the *Builder* for 1878 (vol. xxxvi.), pp. 112, 113.

‡ This chart was, through Mr. Ingress Bell, presented to the Institute by Mr. Tregellas, of the War Office.

§ This project consisted of a design for a very extensive range of buildings, intended to accommodate no fewer than 7,000 men. It was prepared by one Du Bois, described on the plan as "one of his Majesty's engineers."

the Imperial Guard; The Système Tollet: plans, &c.*

In the discussion which followed,

Mr. Charles Barry, in moving a vote of thanks to Mr. Ingress Bell, said the paper in its earlier portion had given some interesting historical and other information as to early barrack construction, and in its latter part had given a great deal of what might fairly be styled authoritative information deduced under the best possible circumstances from expensively conducted experiments made by the War Office,—information which architects, who were not permitted to enter the arcana of military architecture, might yet turn to good account in the humbler sphere of civil architecture. The action of the War Office in regard to barrack construction seemed to have been tolerably consistent from the first, and except in one single instance, it did not seem to have sought outside aid. The result, as Mr. Bell had shown, was that the earlier barracks were very unsatisfactory. Mr. Bell had recounted how, in the case of the cavalry barracks at Knightsbridge, the plans submitted by Mr. Wyatt were set aside in favour of those furnished by the War-office officials, Mr. Wyatt's elevations alone being used. That was a very unsatisfactory method of working, because all architects recognised it as an essential condition that the outside and inside of a building should be interdependent. The result of the various sanitary inquiries made by the War-office authorities could not fail to be of much use to architects, and might be studied with profit. He ventured to suggest that similar *data* to that which had been collected by the Government with regard to the health of troops in barracks was very much wanted with regard to the health of occupants of other buildings, and particularly with regard to the health of people of the working-class housed during recent years in the large blocks of buildings which had been erected for them in London and elsewhere. One piece of information in Mr. Bell's paper which must have surprised many who heard it read was as to the cost of carrying out these barrack buildings. Mr. Bell spoke of their cubing out, on an average, at 5½d. per foot, in these present days of expensive labour, while 6½d. per foot cube was mentioned as that of the cost of what were practically dwelling-houses, viz., the married quarters; and 8d. was given as the price for the gentlemen's residences known as officers' quarters. These prices struck him as being very low. He supposed the works were carried out by competition amongst builders in the usual way? Mr. Bell had spoken of the new barracks at Inverness in such terms that ought to induce every architect to see them, for he had said that every part of the buildings was consistent in character, satisfactory in aspect, and bespeaking its object. If those buildings really did conform to that very high standard of excellence, they constituted one of the most remarkable successes that could possibly be achieved in building. As to the cost per head given by Mr. Bell (225*l.* in one instance cited), it seemed to him (Mr. Barry) to be very high [A voice: "Enormous"] as compared with the cost of other public buildings, such as large schools in which the scholars were resident.

Dr. Balfour (who was introduced to the meeting as having been secretary of the commission instituted by Lord Panmure and Mr. Sidney Herbert to inquire into the sanitary condition of the soldier) observed that Mr. Bell might have brought the period in which barracks were generally unhealthy down to a much later date than the end of the last century; indeed, very nearly to the middle of this century. In 1836 he was appointed, with two military officers, to make a report on the health of the troops, and they found that in the barracks at Tobago the space allotted to each man was only 220 cubic feet. It was, therefore, not surprising to find that the mortality amongst the troops stationed there was very great. He had had the honour to serve for eight years in the Guards, and in his time there was in Hyde Park a building which he could not call a barrack, and adjoining it, a storehouse. The lower part of the building made to serve as a barrack was occupied as a guard-house for the troops who had the watching of the powder-magazine, and the upper floor was occupied as a dormitory and day-room for the company of soldiers engaged on that duty. So small was it, however, that the paillasses had to be arranged in tiers, one above another, on each side of the room, and besides that, there was an additional line of beds made up on the floor in the gangway between the double tier of beds on each side. The place was crowded to four times its healthy capacity, and it was therefore not to be wondered at that phthisis had largely prevailed amongst the men. As showing the light appreciation in which the health of the soldier was held by even high officials in the army at one time, Dr. Balfour mentioned that when, after the fire at the Tower of London, new barracks had been built, the authorities ordered that the men were to occupy some old buildings, as they wanted the new buildings for a store-house for blankets, for the old buildings were much too damp for blankets! The Duke of Wellington, when the matter was brought to his notice, ordered the troops to occupy the new barracks, and directed the storekeeper to put his blankets,—where he liked. On the matter of ventilation, Dr. Balfour mentioned, as having been successful in the old barracks at Winchester, the use of false or hollow beams running across the ceiling from outer wall to outer wall, the bottoms of such beams being of perforated zinc. He agreed with all that had been said in favour of Captain Galton's stoves, but when used it should be seen that they were properly fitted, as he found, when he was in charge of Netley Hospital, that though the Galton stoves had been fitted in the corridors, they had been provided neither with air-chambers behind the grates nor with louvre openings into the rooms.

Mr. Thomas Porter agreed with Mr. Barry in thinking that 200*l.* and upwards per head for buildings of the class described in the paper was an excessive price to pay, unless it included the cost of the ground, which he understood was not the case; but he could not agree with Mr. Barry in thinking that 5½d. per foot cube was a low price for such buildings, which were mainly composed of large rooms. Nor did he understand how, in the buildings described, the cost per foot cube could be reconciled with the cost per head.

Mr. E. C. Robins, in the course of a few remarks, spoke of the value of the statistics and data furnished by Mr. Bell in the paper, and referred to the works of Parkes and De Chaumont as being especially worthy of study by architects.

Mr. William White and Mr. Henry Dawson both expressed their inability to understand the cost of the buildings treated of in Mr. Bell's paper, Mr. White pointing out the vast difference between their cost and that of the older barracks.

The Chairman, in summing up the discussion, spoke of the paper as a valuable contribution to the Transactions of the Institute. The only thing with which he could compare it at the moment was the able article "Barracks" in the new edition of the *Encyclopædia Britannica*, which bore the initials of a well-known officer of the Royal Engineers. With regard to the cost of some of the buildings mentioned in the paper, he was able to say of his own knowledge that in the case of the new Chelsea Barracks a very large sum had to be expended in foundations on a portion of the site which had formerly been a part of the bed of the river. In putting the vote of thanks to the meeting, the Chairman included the name of Mr. Tregellas, for his kindness in presenting to the Institute the very interesting historical chart showing the Horse Guards buildings in Whitehall.

Mr. Ingress Bell, in replying on the discussions, said that in all cases the erection of the buildings he had described had been submitted to competition in the building trade in the usual way. The apparent discrepancy of cost per foot cube of the different portions of a modern barrack, as compared with the cost per head, would be explained by the fact that besides the barrack buildings proper there were numerous accessory buildings, such as canteens, cook-houses, bath-rooms, &c. As to Mr. Barry's *badinage* about the Inverness barracks, he (Mr. Bell) had been somewhat misunderstood with respect to the character of their design. All he wished to bring out was that they would compare favourably with most other buildings of their class.

* Of other illustrations of buildings for soldiers which we have published in past volumes, we may name the following:—Victoria Military Hospital, Netley (Mr. Mennie, architect), vol. xiv. (1856), pp. 458, 459; the Officers' new Barracks, Dover Castle (elevation by Mr. Salvin), vol. xvi. (1858), p. 679; and Plan for a Regimental Hospital (by Dr. Combe, Royal Artillery), vol. xviii. (1860), p. 608.

HINTS ON HOUSE DECORATION.

This was the subject of a long address given by Mr. William Morris, under the auspices of "The Trades Guild of Learning," on Saturday evening last, in the Hall of the Society of Arts, which was crowded to its utmost limits. Professor Hales, of King's College, presided, in the unavoidable absence, through domestic affliction, of Mr. Arthur Cohen, Q.C., M.P., who had been announced to preside.

Mr. Morris said that perhaps it would detract from the value of the instruction that his audience might get from him when he told them that he had no claim to represent any one craft in particular. Division of labour, which had played so great a part in furthering competitive commerce, which few dared to resist, and of which none, as it seemed to him, could foresee the result, had dealt especially hard upon that field of human culture in which he was born to labour. Division of labour, which was once the servant, was now the master of competitive commerce, which latter itself was once the servant, though now the master, of civilisation. It had resulted in some men becoming acquainted with many crafts, though masters of none. He would hold his peace on these matters unless he hoped by speaking to stir up others than himself to discontent with and rebellion against things as they were,—rebellion not against the laws of Nature, but against the customs of folly. Let them, however, proceed to consider by what forethought they could make the actual dwellings which almost all of them were of necessity compelled to live in, brighter, better, and more wholesome. In dealing with the subject he should perforce be speaking of those middle-class dwellings of which he knew most. There was no dignity or unity of plan about an ordinary modern house, big or little, and it was devoid of a centre. In brief, it was a mere congeries of rooms, with no special relation to each other. A few lucky people had the good fortune to live in the grand old houses their forefathers built. To such persons all he could say would be to remind them not to forget their duty to those buildings, not to alter or torment them, but to treat them as if their builders could still be wounded by their griefs and rejoiced by their well-being. There were some others who lived in houses that could scarcely be called noble,—nay, they might be called ignoble, but they were yet built solidly and conscientiously; and though they had little beauty, or none at all, they were characterised by fitness and common sense. The earliest buildings of this class dated from the time of Queen Anne, but many of them were later, and of the Georgian period. But these classes of buildings were very difficult to decorate properly, especially by those who had any leaning towards romance, because they still had some traces of style left in them. It should not be forgotten that the rebellion which they had met that night to further had been begun, for of late years houses had risen which were neither the cut-and-dried stock designs of the builder, nor academical imitations of by-gone styles. Especially deserving of their thanks was the School Board for London, who had shown that they recognised that art might go for something in education by refusing to allow shabbiness and scamped work to be characteristic of their school buildings. It was most inspiriting to see their fine buildings rising over the sordid level of the surrounding streets, and to be reminded of the well-founded hope in which they were built. Holland House, Kensington, was almost the only building left in London of the first-class of dwellings which he had mentioned. There were, until within the last few years, one or two houses in Lime-street of about the same period, but unfortunately they belonged to a society too poor to keep them standing,—viz., the honourable Company of Fishmongers. Besides these two classes of old houses, there were a few modern ones inhabited by the ringleaders of the rebellion against sordid ugliness. But the houses of those three classes taken together were utterly insignificant in number compared with the great mass of the houses of the people,—houses which he hoped it would one day be difficult to believe could ever have been built for a people not lacking in honesty and independence. The truth was that the people who lived in them had long since ceased to think about them, being content to live in them so long as they were warm and dry. He and those who thought with him wanted to make

the dwellings of the people fit for their occupants in appearance as well as in comfort. The first step towards the attainment of that end was to get people to interest themselves in the question as to what was best to be done with the makeshift houses which (however desirous of obtaining dwellings more satisfactory in an art point of view) the great majority of people would have to continue to live in for some years to come. Such makeshift buildings could not be got rid of all at once. For his own part, however bad the house he lived in might be, he would not despair of improving it, in some degree, at any rate. He felt that he should have little claim upon the attention of his audience if the question involved nothing more than gaining a little more content and pleasure for those who already did not lack their fair share of them. The question included much more than that. His hope was that those who began to consider how to make the best of the chambers in which they ate, slept, and sat, would soon begin to feel an earnest discontent with the sordidness by which they were surrounded. His extravagant hope was that people might some day learn something of art, and form a longing for more, and that they would realise that there was no way of getting it except that of giving a man work to do congenial to him, without fear of intimidation by fellow-workmen and without anxiety as to the means of livelihood for himself and family. Before proceeding to speak of the interior of the house, the lecturer referred to the garden, which, he said, suburban gardeners generally made the worst of, aping, in the little patches of ground which the elastic conscience of the speculating builder left for them, all the windings and other features appropriate only to landscape gardening on a large scale. The abomination called "carpet-gardening" carried in its name the best proof of its own absurdity. As to the outside of the house itself, it was generally too ugly to render it possible to do much with it. In ordinary houses the paint used externally should be chiefly white or whitish, for when a building was ugly in form it would bear no ornamentation in the way of colour. The sash-bars of the windows should always be painted white, so as to break up the dreariness of the outside of the house. The lecturer cautioned people against using the dull brownish reds now apparently becoming fashionable for external painted work. This colour was sometimes called "chocolate," but a better name for it would be "cockroach" colour. He then proceeded to dwell on the details of interior house-decoration, referring, among other matters, to ceiling decoration, and urging the avoidance (where it was not possible to expose the timbers of the roof or floor above an apartment) of what he called those ghastly caricatures of art which made up the sum of modern cast plaster-work. Perhaps, he said, there were few of the crafts accessory to building which had fallen so low as that of the plasterer. He deprecated the filling to repletion with furniture of some rooms, and recommended people to let their furniture be simple though artistic, but only what was necessary for use,—none to satisfy the claims of fashion. All rooms should look as though intended to live in. Why should a dining-room generally look like nothing so much as a dentist's parlour, only to be occupied during an operation, and to be left when the operation was over,—the tooth out or the dinner in? While all rooms of well-to-do people should be artistic and comfortable in their decoration and furniture, their *ensemble* should not be such as to make a poor man ill at ease in them, nor should their luxuriousness be such as to make a thoughtful man ashamed. As things were at present, rich people would not have art, and poor people could not. A great deal had been heard of late about "cheap art." What was meant by it? Was there to be one art for the rich and another for the poor? Art was art, and people who talked about cheapening it forgot that it was not so accommodating as Law and Religion. And how was this cheap art proposed to be got? A great deal of it by that universal panacea, division of labour. A Pecksniff was to squint and scrawl for a time on a sheet of paper, and that sheet of paper was afterwards to set a lot of men to turn cranks all day for hire. From this were to accrue three-fold blessings,—food and clothing and very little leisure to the operatives, enormous riches to the capitalist, and moderate riches to the squinter on the paper. The result was to be an abundance of cheap art for the operatives or crank-turners. There had been many schemes suggested for such operations as skinning a flint or boiling down a flea for the sake of its tallow, and this scheme for the production of cheap art was on a par with them. The only way in which it was possible for art to live in the industrial crafts was to make each workman a master of his trade from beginning to end, and to abolish the pernicious system of keeping a man perpetually doing only one thing,—working at only one "branch" of his trade. Only the workman who was master of his craft from beginning to end could produce works of artistic merit, but under the present system of division of labour such a man was likely to be regarded as a very troublesome fellow, and as mere grit and friction in the gold-grinding machine.

A SUBSIDING TOWN.

We were recently at Northwich, where the chief trade is pumping brine out of the ground in order to produce common salt, and were much astonished by the appearance presented by part of it. The effect of continued pumping causes the surface of the ground to sink, and this subsidence results in serious damage to building property. A project is on foot, we believe, to obtain, by legislation, means of compensating owners of property injured by the subsidence, and not before it was needed. It would be difficult by words to convey an idea of the sad condition of many parts of the town. All new buildings are now constructed of timber framing, the lower part of which is formed of massive pieces of timber or cills, and as the ground subsides, and the house becomes 2 ft. or 3 ft. lower than the street, instead of perhaps 6 in. or 1 ft. above it, as originally constructed, screw-jacks are introduced under the timber cills or plates, and the whole is raised up to its original position. We saw one house and shop that had been twice raised, though it has been built only a very few years. The old County Court-room has come forward lately, as if to enlist legal assistance. We were at Northwich during the recent floods, and the lower streets with the basements of the houses, and the ground-floor too, were entirely under water. Northwich evidently needs looking after.

INDUSTRIAL ART-TRAINING AT GENEVA.

A favourable report reaches us concerning the Geneva special school founded two years ago by the State for the study of decorative arts. This establishment is situated in the capital itself, and the building cost the canton of Geneva no less than 40,000*l*. It suffices, however, to visit one of the apartments of the ground-floor to meet at once a clear proof of the success of the enterprise. This portion of the building is set aside for the exposition of the works of art achieved by the pupils; but the show-cases which were to hold these objects will be found nearly empty. The fact is, that nearly every article exhibited has at once found a purchaser, and thus this room remains in a denuded condition. Close at hand there are the offices for the administration of the school, and the workshop for the ceramic arts. The ovens and the foundry are, however, in an outer building. On the first and second floor of the school will be found the workshops for the moulding, chasing, and sculpture on wood and stone.

The school of 250 pupils and its annual budget amounts to 3,200*l*. There are two categories of pupils,—the first, known as the regular pupils, must, to be admitted, possess a diploma from the Municipal School of Arts applied to Industry, or else pass an examination. When they have thus established their competency and natural aptitude, they are admitted as regular pupils, and follow either a complete course of artistic training, or devote themselves to one special branch. These pupils alone are allowed to participate in the competitions and prizes offered by the State. The second class of pupils are the outdoor pupils, for the most part artisans, apprentices, and tradesmen; they are allowed to follow the course of training gratuitously when they can prove that they possess sufficient natural aptitude to benefit from this opportunity. There are three classes: the first for modelling and sculpture of ornament and the figure; the second, small and large *repoussé* work; the third, the ceramic arts.

The teaching is of an essentially practical description, and the professors keep a keen watch to prevent the pupils losing any time. In fact, all students who are not earnest in their work, or who are not sufficiently gifted to work with success, are carefully eliminated. Any absence during class hours is reported, and repeated offence in this respect may entail expulsion from the school. Altogether the work is carried forward in real earnest, and does credit to the small but well-administered canton of Geneva. The Swiss have so often distinguished themselves in schools of art in France and elsewhere that we are pleased to note the increased facilities now afforded by which they will be able to work in their own country, surrounded by the noble scenery that cannot fail to inspire all true artists.

COLOGNE CATHEDRAL.

A PORTION OF THE WEST FRONT.

As most of our readers are aware, the west front of Cologne Cathedral was one of the portions of that great church left in a very incomplete state by its Mediæval builders. In fact, what had been executed amounted to little more than a third of the southern tower and the basement of the northern one. Attached to the southern tower was a part of the jamb of the great west window. Nearly the whole of this was fourteenth-century work, though there were indications that a small portion of the north tower was of an earlier date. Our illustration represents the lower part of the southern tower, and shows one of the windows and the remarkably elegant doorway. This doorway, for more than four centuries, formed the principal entrance to the cathedral, and its tympanum is decorated with sculptures representing scenes from the lives of St. Peter and St. Paul. The canopy above it was a very beautiful example of German Geometrical tracery, but was in such a decayed state as to render its removal, some months back, absolutely necessary. The whole of this tower is covered with scaffolding, and is now in course of restoration. Our drawing represents it as it appeared before this operation was commenced, and before the canopy over the doorway was removed. We trust that the restoration in progress will not obliterate the appearance of antiquity of this part of the building, because it is very interesting to those who are now living, and will be still more to those who come after us, to be able to trace exactly where the Mediæval work ended and the modern work began. We hope, also, that even if the present pump is destroyed, it will be replaced by some kind of fountain or ornamental well, as these wells attached to German churches date from very early times, and are interesting features. The examples of them are very numerous; the best known, and those which recur most readily to our memory, are in Ratisbon cathedral, the Minster at Freiburg, and the cathedrals of Paderborn, Augsburg, and Prague. We have no doubt that the present not very ornamental pump at Cologne occupies the position of an ancient structure similar to those to which we have alluded.

While speaking about Cologne Cathedral, we should like to know whether any of our readers can explain the very singular view of Cologne Cathedral represented in p. xci. of the "Nuremberg Chronicle"? Here a very lofty tower, of more than four stories in height, is shown to the north-east, and the apse, in a very unfinished condition, with a great crane on the top of it, is shown to the west. What makes the matter somewhat singular is that in this view the other churches of the town, especially St. Cunibert's and St. Martin's, are tolerably correctly drawn. We confess that we are quite at a loss to account for this very peculiar representation,—or shall we say misrepresentation?—of the cathedral. It is quite impossible that it could have looked at all like this in the year 1493, which is the date of the publishing of the "Nuremberg Chronicle." Is it possible that the engraving can be taken from a drawing made some centuries earlier, and that the tower shown belonged to the former cathedral? If what we surmise is the case, the drawing must have been made some time previously to the year 1322, as it shows the apse in a very unfinished state, and without a roof; whereas we know that the choir was completed and consecrated in that year.

It has been asserted that Conrad von Höchsteten did not really begin the present cathedral in 1248, but that he only patched up the older church, and that the present cathedral was not commenced until 1270 or 1275. This statement we find repeated in Murray's Handbook for Northern Germany. We cannot find what authority there

is for this statement, as it is quite at variance with that of Kugler; but, judging from the style of the building, we should not be at all surprised to find that it was true. We have come across another statement, that Cologne Cathedral was designed by Archbishop Englebert, whose shrine is now to be seen in the cathedral. There appear, however, to have been two archbishops of the name of Englebert, Archbishop Englebert II., whose name was von Rile, erected the beautiful "Bergen Tower" in 1261. The name von Rile is singular, as being that of the man to whom the design for the choir of the cathedral is attributed, "Gerhard von Rile."

Now, if Archbishop Englebert von Rile designed the cathedral, it could not possibly have been commenced in 1248. Victor Hugo says, in his charming work upon the Rhine, that the architect of Cologne Cathedral was named "Englebert de Berg." This is, however, probably the same person as Englebert von Rile, and his bearing the name *de* (or rather *von*) Berg may account for the tower which he erected at the south end of the town being called the "Bergen Thurm."

A letter in the *Athenæum*, by Mr. Edward Scott, gives a copy of a deed of contract entered into between a certain Rudenger, director of the works at Cologne Cathedral, and the Burgrave of Drachenfels, to the effect that the latter shall supply stone from his quarry, "*ad opus structure Coloniensis*," and the date 1280 is attached to the contract. Now there is a singular thing about this document, and that is the fact that it nowhere mentions the cathedral as having been then commenced! On the contrary, any person reading it would naturally suppose that it was a contract to supply stone for a church about to be built. Of this man called Rudenger we know as little as we do of Gerhard von Rile [why does Mr. Scott spell the name "*Riehl*"? All the German authorities we have seen spell it in the way we have adopted]. Whether they were master-masons or contractors; whether they were simply men employed by the chapter to arrange for the purchase of materials, or whether they were the absolute architects of the building, there is nothing to show. We have, however, the following names associated with the building of Cologne Cathedral:—

Gerhard von Rile	c. 1248
Archbishop Englebert von Rile	c. 1261
Rudenger	1280
Meister Johan von Köln	1322

The tradition that Albertus Magnus designed Cologne Cathedral seems to be devoid of foundation, and if, as is also stated, that prelate designed his own cathedral church at Ratisbon, he is not likely to have designed the cathedral at Cologne, as the buildings show the influence of two different schools of architecture. Perhaps the fact that Albertus Magnus died at Cologne about the year 1300, and was, as the "Nuremberg Chronicle" relates, buried in the Church of the Holy Cross in that city,* may have given rise to a supposition that he had something to do with the erection of the cathedral.

Whether we have yet found the name of the architect of the magnificent Cathedral of Cologne is a matter of doubt; and until some more positive evidence is forthcoming, we must follow the example of the builders of the Walhalla at Ratisbon, who have erected a tablet to his memory, without venturing to suggest his name.

NEW PREMISES FOR THE MANCHESTER AND COUNTY BANK, KING-STREET, MANCHESTER.

These premises have been erected on the site of one of the oldest houses in Manchester, Dr. White's house, afterwards converted into the York Hotel, and then used for a long period as offices until its purchase by the bank.

The building has a frontage to King-street of 53 ft., and to Chapel-walks at the side, of 127 ft.; about half-way back from the front the site widens out to 64 ft. 6 in.

The whole block is appropriated to the use of the bank; the tower on the left of the principal front contains an entrance porch, 19 ft. by 13 ft., with stone groined roof; above this are waiting-room and directors' lavatory, the whole crowned by a slated spire rising to a height of about 120 ft.

* See p. cclxiiii.

Immediately to the right of the tower are windows lighting the staircase leading to the board-room, which is on the first floor, and occupies the remainder of the frontage on this story; below it is the general committee-room, and above some spare rooms. The upper windows to the side street are those of the directors' dining-room, kitchen porter's residence, &c.

As the rooms to the front and side occupy only some 25 ft. in depth, there is a large internal space forming the banking-room proper, lighted from above, which, however, extends to the side street and is lighted on that side by the lower range of windows. The banking-room thus formed is about 100 ft. by 60 ft., and consists of a central nave, 26 ft. wide, divided by granite columns from two side aisles, 10 ft. 6 in. and 20 ft. 6 in. wide respectively.

Parallel to the side street, and leaving a space for the customers of 11 ft. in width between it and the wall, is the counter, 61 ft. long; behind the counter and the space for the cashiers is a dwarf screen, 5 ft. 3 in. high, beyond which all the clerks are accommodated; the managers' desks are at one end of the nave, on a raised dais surrounded by a dwarf screen, and giving them complete supervision of the room. In the basement are clerks' lavatories and cloak-rooms, book and stationery stores, and three strong-rooms situated in the centre of the cellars. These strong-rooms, measuring about 19 ft. by 12 ft. each, are built of iron plates enclosed on all sides and above and below by brickwork of great strength, built of blue Staffordshire bricks in cement, and entered by magnificent fire-and-fraud-proof doors made by Chatwood, of Bolton. The rest of the cellars are all lined with glazed white and grey bricks, arranged in simple patterns, and the ceilings are of strong brick arching.

The banking-room itself has oak panelled ceilings, that of the nave being arched, and the panels glazed; above this, again, is the outer roof, glazed on Rendle's system. The walls are lined with panelled oak dados, 6 ft. high, above which they are covered with creamy coloured Belgian marble, the object being to have this part of the establishment finished in such a manner that painting and whitewashing might never be required. The floors of all passages, &c., traversed by the customers, are laid in vitrified mosaic by Oppenheimer, and have a very artistic and business-like appearance. The strong-rooms are approached by hydraulic lifts, by means of which the books, cash, &c., can be lowered and raised. The board, committee, &c., rooms, are all finished in pitch-pine, with high dadoes and panelled ceilings of that material.

The exterior of the building is faced with Spinkwell stone, the plinth, however, being in polished red granite. The general contractors were Messrs. R. Neill & Sons, of Manchester, with whom worked Hamilton, bricksetter; Graham, mason; Woolstenhulmes, ironfounders; Jaffrey, plumber; Messrs. Pattison provided the marble wall lining; Mr. Wilson, grates and gas standards; Messrs. Lavers & Barraud, and Messrs. Edmundson & Son, the stained glass; Messrs. Wren & Hopkinson, the hydraulic lifts; Messrs. Milner & Co., the locks. Messrs. Mills & Murgatroyd were the architects.

THE SUBMARINE TELEGRAPH COMPANY'S NEW OFFICES.

The Submarine Telegraph Company was established in the year 1850, to work submarine telegraph cables, under concessions granted by the French and Belgian Governments, and was the pioneer of submarine telegraphy. The company began operations by laying down a cable, containing four conductors, between Dover and Calais, and another cable, containing six conductors, between Dover and Ostend. There are at the present time twenty-four conductors laid down between England and France, contained in six cables; ten conductors between England and Belgium, contained in two cables; and one conductor between Jersey and France. By the Telegraph Act of 1868 the Government acquired, by purchase from the Electric Telegraph Company and Reuter's Telegram Company respectively, two cables to Holland, containing eight conductors, and one cable to Germany, containing four conductors. These three cables to Holland and Germany are worked by the Submarine Telegraph Company, in addition to the before-mentioned cables to France and Belgium. Besides the cable to Germany, purchased of Reuter's Telegram Company, there is another cable laid down between England and Borkum, belonging to the German Union Telegraph Company, worked by the Submarine Company, affording three more conductors for the general European correspondence, *vid* Germany, and one conductor, worked by the Anglo-American Company, for American telegrams. The cost of a telegram between England and the coast of France in the year 1850, when the first cable was laid, was 6d. a word. This rate has been gradually reduced, until, in the year 1867, the price of a twenty-word message from London to any part of France was 4 francs, or 3s. 4d.

At the Telegraph Conference held in London last year the rate for messages to and from any part of the United Kingdom, and any part of France, was fixed at 2½d. per word, and for Belgium, 2d. per word. If this were widely known the submarine wires would be even more used than they now are.

Two pneumatic tubes are laid down between the Post-office in St. Martin's-le-Grand and the Company's new building for the conveyance and distribution of telegrams transmitted to and from the Continent and provincial stations in the United Kingdom; and a third pneumatic tube is connected with the original office of the company in Threadneedle-street, which will for the future be occupied exclusively by the Post-office as a Postal Telegraph Station. There will also be placed two pneumatic tubes in connexion with the Stock Exchange, to be used exclusively for the members of that institution. All these tubes are made of lead, and are about 2¼ in. in diameter. They are enclosed in cast-iron pipes for protection, and are laid underground. At present there are transmitted by the Submarine Telegraph Company about 8,500 messages a day on an average. The office is open day and night, and on every day, without exception, throughout the year.

The new offices are situate at the angle of Throgmorton-avenue and London-wall, upon ground leased from the Carpenters' Company for a period of eighty years, at an annual rental of 1,200*l.*, being at the rate of 6*s.* per foot super. The site occupies a superficial area of 4,000 ft., having a frontage of 50 ft. to London-wall, and 80 ft. to the Avenue. The total area of floor-space on the eight floors amounts to 21,000 square feet.

The mezzanine and lower basement contain the rooms for the batteries, Otto gas-engines, stores, &c.

On the ground-floor are the public office, messengers' rooms, &c., towards the Avenue, and two spacious shops towards London-wall.

On the first floor are the board, retiring, secretary's, and clerks' rooms; on the second floor the accountant's rooms and Morse-band stores; the third and fourth floors are appropriated entirely to working the instruments; and the fifth floor is reserved for future extension.

The two elevations rise to a height of 62 ft. from the pavement to the parapet, and are faced with Portland stone.

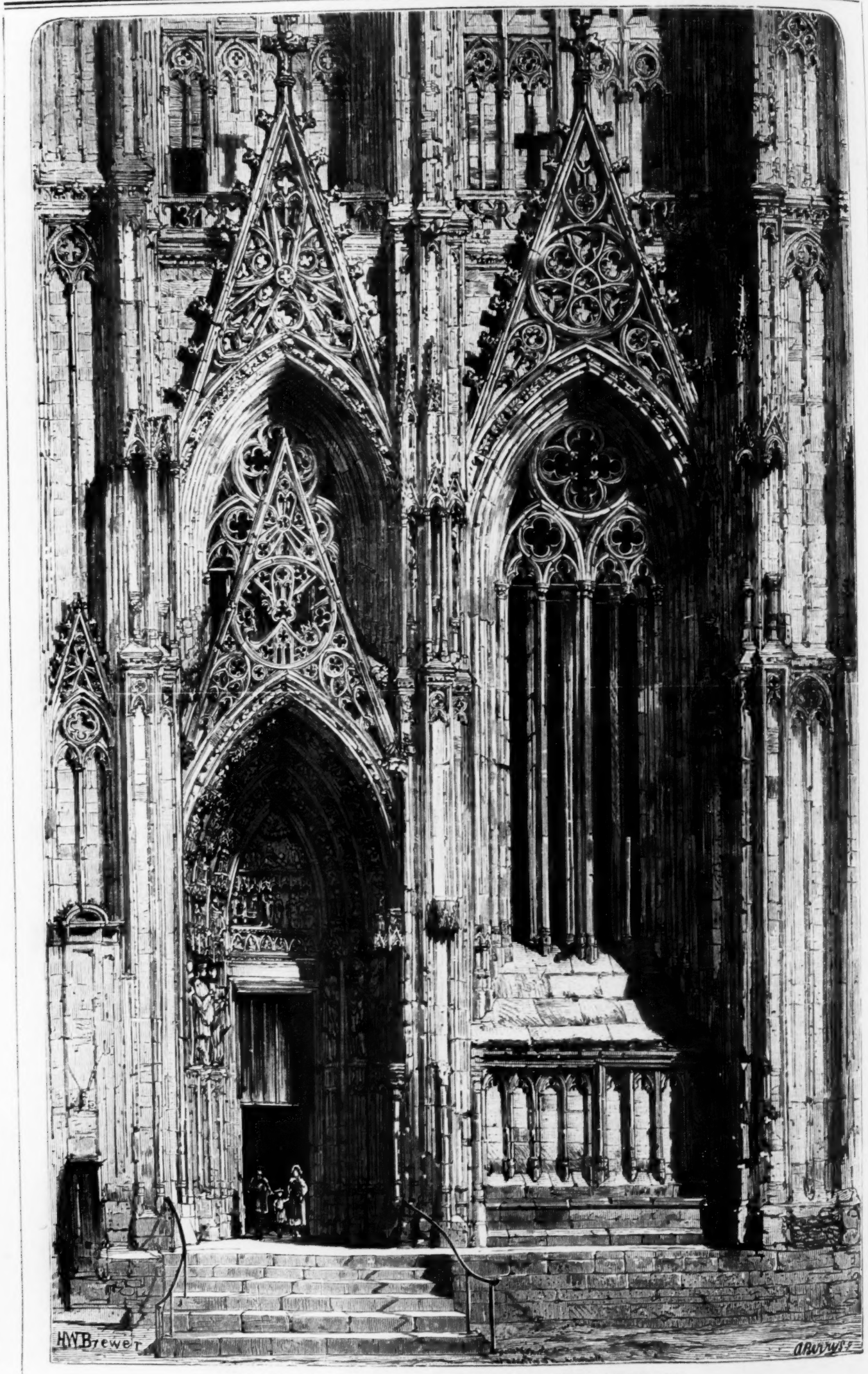
The carving is somewhat elaborate, and symbolises the four quarters of the globe, the monogram of the company, and other emblematic designs.

The works have been done at a cost of about 20,000*l.*, by the following contractors:—Messrs. Peto Brothers, general contractors; Messrs. Edmundson & Co., gas engineers; Messrs. H. Greene & Son, gas-fittings; Mr. Banner, ventilation of drains, closets, &c., and M. Papier, of the instrument-rooms; Shand, Mason, & Co., for fire appliances; Pearson for trapless twin basins; J. W. Falkner for fittings; R. Adams for casement fittings; and Daymond for carving.

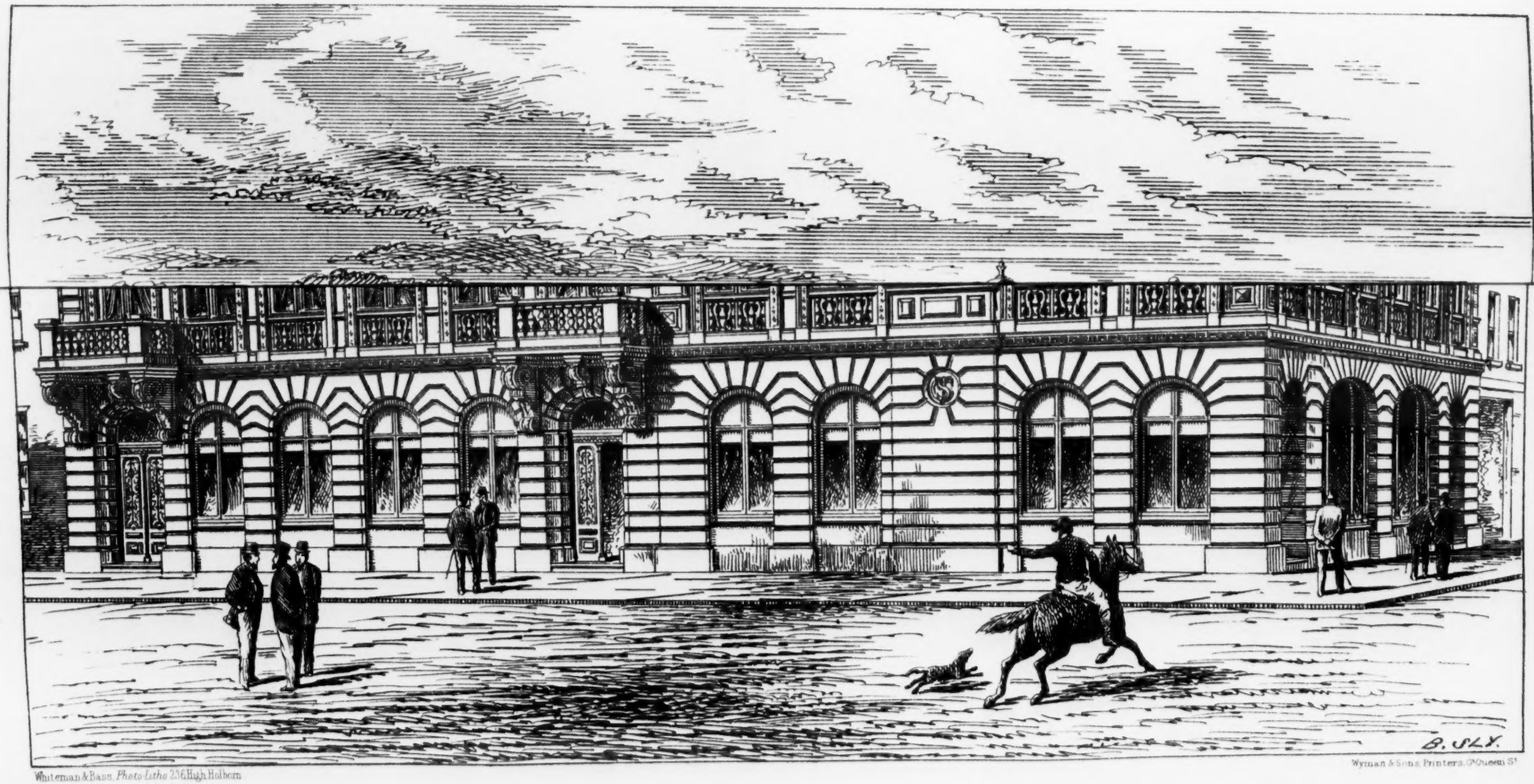
Mr. Grant was clerk of works; Mr. Caird, builder's foreman.

The architect to the company is Mr. Norton, of Old Bond-street, under whose superintendence the works have been executed.

Stained Glass.—The large west window of St. Jude's Church, Gray's Inn-road, has just been filled with stained-glass representations of the Four Evangelists. The centre-piece of tracery above these contains the figure of "Our Lord Blessing the World." In the base of the window are the emblematical bearings of the figures. The window was designed and executed by Mr. Geo. Rees, of Lamb's Conduit-street.



COLOGNE CATHEDRAL: A PORTION OF THE WEST FRONT.



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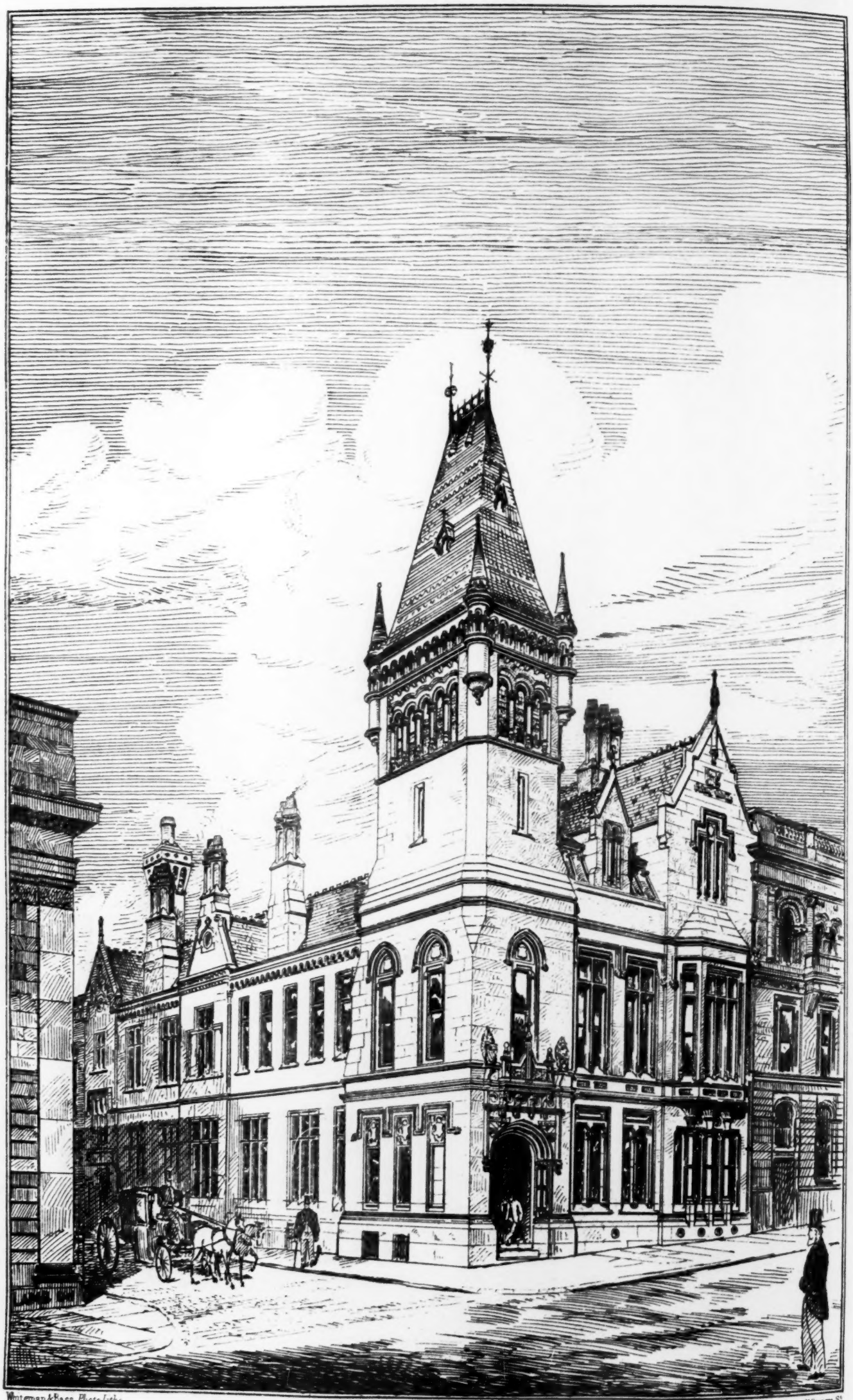
THE SUB-MARINE TELEGRAPH COMPANY'S NEW OFFICES, LONDON WALL.—Mr. John Norton, Architect.



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THE MANCHESTER AND COUNTY BANK, KING-STREET, MANCHESTER.

MESSRS. MILLS & MURGATROYD, ARCHITECTS.

THE BUILDER, NOV. 20, 1880.

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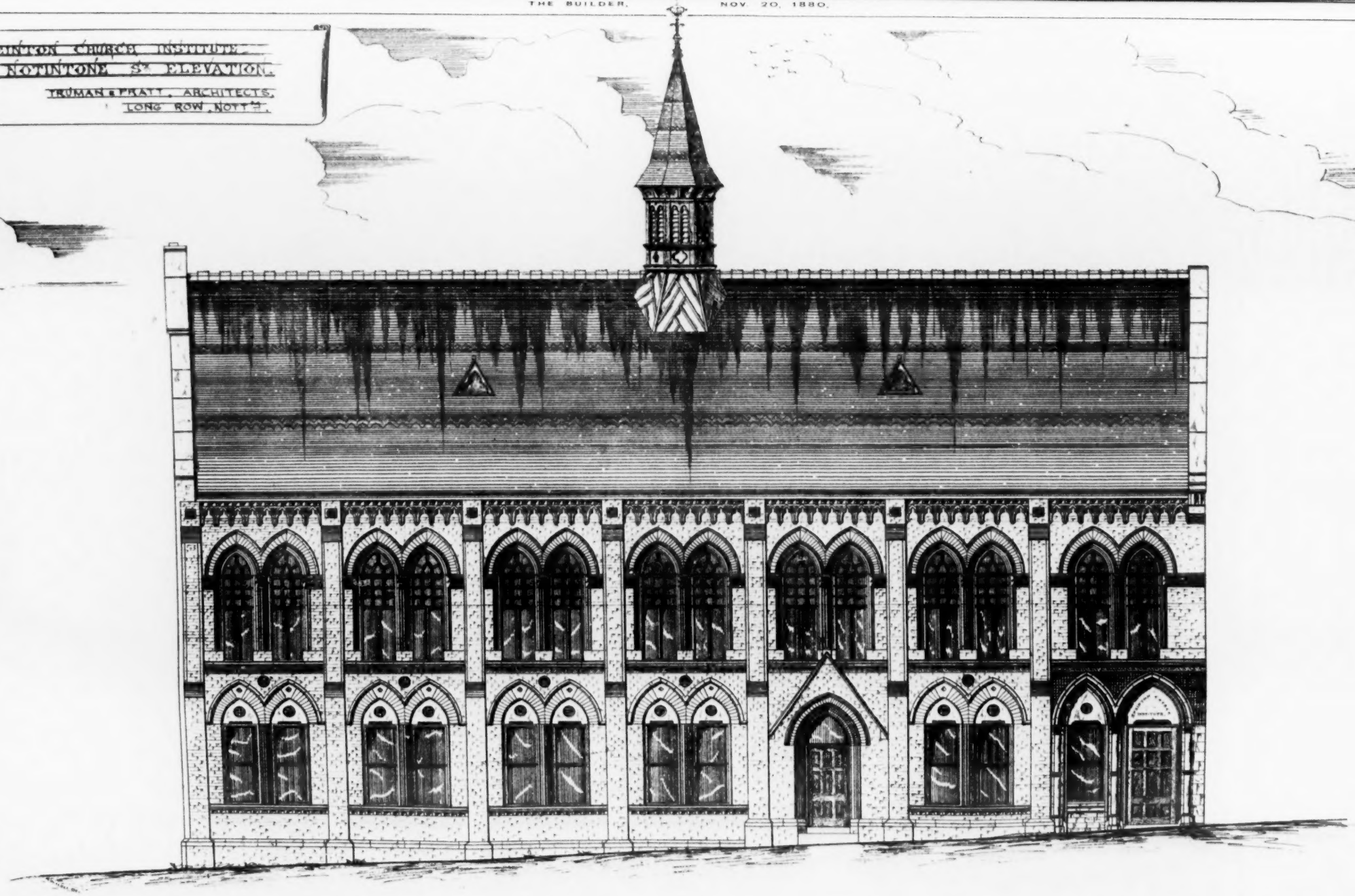
THE SUB-MARINE TELEGRAPH COMPANY'S NEW OFFICES, LONDON WALL.—MR. JOHN NORTON, ARCHITECT.

SUTTON CHURCH INSTITUTE.

NOTINTONE St. ELEVATION.

TRUMAN & PRATT, ARCHITECTS,
LONG ROW, NOTT.M.



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NEW SNEINTON CHURCH INSTITUTE.

This new building is situated at the corner of Beaumont-street and Notintone-street, opposite to St. Stephen's Church and adjacent to the Board Schools. The style of the architecture is Venetian Gothic, freely treated. The jambs and arches of the windows and doors, and the cornices, are of moulded brickwork supplied by the Hathern Brick Company from designs of the architects. The doorway to the large hall is constructed of Darley Dale stone with red Mansfield for the columns, the caps of which are carved in natural foliage, and upon the tympanum the name of the institution is cut in raised letters. The entrance to the coffee-tavern is built with moulded brickwork, and upon the tympanum of the door is placed a shield bearing the arms of the diocese. The caretaker's house is in Beaumont-street, from which side also the coffee-tavern is entered.

This part of the building consists of a well-proportioned room, 41 ft. in length, 20 ft. in width, and 22 ft. high. In the rear is the kitchen, conveniently situated, furnished with efficient appliances and hoist as a means of service to the hall above. Communicating with the coffee-tavern is the men's club-room, an apartment 20 ft. long and 16 ft. wide, and another room intended to be let for Oddfellows' lodges and other purposes on week-days, and used as a mission-room on Sundays. To render it available for this latter purpose there is an entrance from Notintone-street.

From this side of the building the Young Men's Institute rooms are approached, and these consist of a reading-room, 24 ft. in length by 16 ft. wide, and a room for games, &c., 41 ft. long by 17 ft. wide. Throughout the whole of the ground-floor there is a communication by means of which the caretaker can have access to all rooms without going out of the building. The approach to the large hall is by a stone staircase 6 ft. wide, entered from the northern end of the Notintone-street front. A small committee-room is here provided on the ground floor. From the corridor at the head of the staircase the doors of the large hall open to this room together with the platform. The retiring-rooms behind occupy the whole of the upper part of the building. The hall is 66 ft. in length, and 41 ft. in width, 30 ft. from floor to ceiling, and is capable of seating 500 people; a balcony runs round three sides. Underneath one side there is a passage by which the platform and retiring-rooms are reached, the latter being provided with lavatories. The roof of the hall is open timber, match boarded. The platform will accommodate a large number of persons, and is designed with especial regard to the requirements of concerted and chorus music. The hot-water apparatus by which the rooms are warmed has been supplied by Messrs. H. S. Cropper & Company, of Nottingham. The lighting is by sunlights, and the fresh air is admitted by casements in the windows, also by perforated boarding above the plate running round the room, communicating with the dormer ventilators in the roof. The exit of vitiated air is provided for by perforated zinc plates placed in the ceiling, and in direct connexion with the ventilating turret through which the sunlights discharge their heated vapours into the open air. The building has been erected in a satisfactory manner by Messrs. Wheatley & Maule. Messrs. Truman & Pratt, Long-row, Nottingham, are the architects.

THE BANK OF SCOTLAND, DUNDEE.

This building has recently undergone extensive alterations and additions. The floors and internal walls of the basement and ground stories were entirely removed, and the plan was rearranged on a more symmetrical basis. The original area was considerably extended by absorbing an open court, and the lighting much improved by glazing the roof of the extended portion. The building, which stands at the corner of two chief thoroughfares, has had the ground story rebuilt. Mr. G. S. Aitken, Dundee, was the architect.

Dusseldorf Exhibition.—The materials used in the construction of the Düsseldorf Exhibition are being in most part sent to Breslau, where an exhibition of Silesian industry is to take place next year. There is a surplus at Düsseldorf of 15,000*l.*, being nearly 15 per cent. of the gross receipts.

MR. EDMUND SHARPE'S WORKS.

For the List of Books, see page 595 of last week's *Builder*.

LIST OF PAPERS IN TRANSACTIONS OF DIFFERENT SOCIETIES, &c.

Transactions of the Royal Institute of British Architects:—

I. On the Subordination and Distinctive Peculiarities of the Mouldings of the Seven Periods of English Architecture. Read at the Ordinary General Meeting, May 19th, 1851. Eight pages.

II. Letter to Professor Donaldson from Naples, dated Jan. 7th, 1865.
Two pages, printed with "Occasional Papers." In this paper Mr. Sharpe states that "the true history of Italian Mediæval Architecture has yet to be written." He was making preparations for writing and illustrating part of such a history when he died at Milan, in 1877.

III. The Architecture of the Cistercians. Read June 19th, 1871.
In Transactions 1870-71, pages 189 to 210. One plate (Cistercian Abbey, model plan).

Report of Proceedings,—General Conference of Architects, 1871:—
Perspective Views in Architectural Competitions. Opening of Discussion, May 24th, 1871. Pages 63 to 67.

The *Journal* of the British Archæological Association:—
On the Ruins of the Cistercian Monastery of St. Mary-in-Furness. Vol. VI. (1851), pages 309 to 317; 359 to 374. Ground-plan, and 24 woodcuts.

The *Archæological Journal*, published under the direction of the Council of the Royal Archæological Institute of Great Britain and Ireland:—

I. On the Geometrical Period of Gothic Architecture. Read at the Lincoln meeting, in June, 1848. Vol. IX. (1852). Pages 170 to 179.
"This formed the basis of a work, subsequently published, in which I proposed a new division and nomenclature of the styles of English Architecture." (Allusion to "Seven Periods,"—in Paper read at Lincoln in 1848. See below.)

II. Report as to Byland Abbey Exploration. Dated Nov. 14, 1875.
Vol. XXXIII. (1876), pages 2 to 5.

III. Description of Byland Abbey.
Vol. XXXIII. (1876), pages 5 to 8.
Separate card (8¾ in. by 5½ in.).
Guide to the description of Ely Cathedral delivered July 10th, 1854. (Cambridge printed).

Reports and Papers read at the Meetings of the Architectural Societies of the Diocese of Lincoln, county of York, &c., during the year 1868. Lincoln: Williamson. 8vo."
On Lincoln Cathedral.—A paper read at the Lincoln meeting [of the Lincoln Diocesan Architectural Society], June 17th, 1868. Pages 179 to 190.
This paper was also published as a pamphlet. Pages 1 to 12.
Separate card (8¾ in. by 5½ in.)
Guide to the Architectural History of Lincoln Cathedral, as described June 17th, 1868. (Lancaster printed).

PAMPHLETS.

I. A Letter on Branch Railways, addressed to the Right Honourable Lord Stanley of Alderley, President of the Board of Trade, &c., containing suggestions for the erection of a system of secondary railways for the agricultural districts. With an Appendix and Map. London: Simpkin, Marshall, & Co. (Lancaster printed), 1857.
8vo. Thirty-six pages. Map of Vale of Llanrwst. 1s. 6d.

II. A Letter to the Right Honourable the Chancellor of the Exchequer on the Disfranchisement of the Borough of Lancaster. Lancaster, 1867.
8vo. Objecting to the Disfranchisement by Mr. Disraeli's 1867 Bill.

III. Four Letters on Colour in Churches, on Walls, and in Windows. (Reprinted from the *Builder*).
a. First edition. London: Spon. (Lancaster printed), 1870. 8vo., Twenty-seven pages.
b. Second edition. London: Spon. 1871. 8vo., Twenty-four pages.

QUERIES.

1. It is intended to compile as an appendix to these lists references to the critical notices of Mr. Sharpe's works. A general reference to the publications in which such notices may be found will be valued by the compilers, if the exact reference cannot be furnished to them.

2. The compilers have also in hand a list of papers printed in the professional journals, and will be glad to receive notes as to them, or as to any of Mr. Sharpe's contributions or communications to journals, magazines, reviews, &c.

3. In September, 1845, a paper was read by Mr. Sharpe at the Winchester meeting of the Royal Archæological Institute, "On the Pointed Arch, illustrated by Drawings and by Models of Vaulting and Groining." The origin of the pointed arch was always a favourite subject with Mr. Sharpe, and was brought forward many times in his published works. Was this, apparently the earliest of his papers, published?

4. In July, 1853, it was stated at the Chichester meeting of the Royal Archæological Institute that "examination had been made of the great portion of the churches of Sussex [by Mr. Sharpe] for the express purpose of bringing the results of the careful survey before the Institute." This was alluded to by Mr. Sharpe at a meeting [when?] of the Royal Institute of British Architects in consequence of something said there by Professor Willis; but were the notes completed and printed after all?

5. At the Kingston-upon-Hull meeting of the Royal Archæological Institute in 1867, Mr. Sharpe gave a paper on Selby Abbey (where he acted as *cicerone*); notices of other churches in the East Riding; also, remarks on Thornton Abbey Chapter-house, and the offices of the Abbey. These were not published in the *Archæological Journal*; are they in print anywhere?

6. There are probably occasional papers in the publications of other societies, English and foreign, as yet unknown to the compilers, who therefore ask for information; as also with respect to plates, &c., contributed to works by other authors.

Communications to be addressed to Mr. J. S. Quilter, 10, Brunswick-square, W.C.

LANDSCAPE BUILDING.

A town ought not, even when stretched on the most level plain, to be laid out too stiffly. The plan of it ought not to be a simple device of streets lying along, with others lying across at right angles to these, like the checks of a tartan plaid. No doubt there should be order in the plan, but there should be variety also. In one quarter the streets might be arranged like the spokes in a cart-wheel, which all diverge from one particular notable central body. In another quarter they might be arranged like the principal streets of Carlsruhe, in the Duchy of Baden, are, which radiate from the grand ducal palace, like the rays of a fan. A town is not properly built, with respect to landscape, where the streets are so narrow, and the buildings so close together, that to apply a common expression you cannot see the town for the houses. The passengers along the street should not be enclosed by monotonous ranges of houses, as by prison walls; but through gaps and openings frequently occurring he should be afforded glimpses of the composition of the town, and down avenues and vistas get occasional views of ornate and remarkable buildings—of monuments and statues, and even of parks and trees, as he moves along. In the spacious parts of the town the blocks of buildings might be set down in open order, like battalions of soldiers ranged in preparation for the combat on the battle-field.

In old times, after town walls of stone had given place to flat earthen fortifications, ramparts gave breadth and definition to town landscape—now we have to look to terracing and esplanades to fulfil this purpose. There is great scope for a discriminating imagination to work in laying out these properly. Large solitary buildings, superb crescents and circuses, have little effect, and lose much of their grandeur when they are not surrounded by a border of ground marked out as their own policy by a parapet, retaining wall, or green slope, and to make this border of sufficient size, and yet not too large, to make it appear wide and not waste, requires a just and discriminating eye.

It contributes to the variety and elegance of a street to have ins and outs. It adds to its amenity, more especially if it be long, when some of the buildings are withdrawn behind the line of the others, and placed in recess. In one division of a chief street the blocks of houses on each side might be placed at one end at a considerable distance apart, and the open space between them kept wide, and the other blocks might be made gradually to converge, to draw closer to the centre of the street and to each other,—step by step,—thus making the plan of the open street similar to the sections of a telescope, till they approached at the other end within easy hail of each other.

A very long street should not be laid out in a perfectly straight line, if it is possible to avoid it, but should either be laid out on a very flat curve, or should bend gracefully away from the straight at either end If a street sweeps towards the sun at the extremities of its curve, the effect of the line is bold; if, on the contrary, the extremities sweep from the sun, the effect is fine. Where the line takes the form of the letter S, there is always indication of caprice. In landscape building, as in landscape gardening, the device of making smaller objects cluster round a larger one, and that other device of leading up from a number of insignificant figures, past guarded and chequered intermediate objects to one grand culminating figure, should not be neglected.

There are always a sufficient number of large buildings in every town to form culminating figures. Cathedrals, halls of justice, town-halls, exchanges, hospitals, barracks, theatres, and, for it is principally great size that is wanted, even prisons are all appropriate for this purpose; they all form heads and peaks rising out of the broken sea of buildings of which the town is composed, and they are all sufficiently large and important to concentrate lines and avenues of approach upon to a greater or lesser extent.

I would even advocate the keeping down the size and restraining the ornamentation, in the houses forming the sides of the streets leading up to the most magnificent fanes, making their architecture tidy and clean, and neat to be sure, but comparatively plain and homely, making them to a certain regulated size and measure of ornament, although still handsome and well-appointed, but of that simple elegance which, like the modest flower, is passed by with little notice in order that the full efflorescence of sculpture might burst forth more luxuriously and voluptuously and conspicuously in the shafts, and mullions, and arches, and cornices, in the flutings and scrolls, in the supports and buttresses, in the domes and minarets and turrets, in the gilded balls and rosy trellises and flaming pinnacles,—cutting against the blue and white sky,—of the mighty fane itself.

There is a large space opened up in the side of a principal street or chief thoroughfare; through this opening, the angles and corners of other buildings are seen to stand projected, like the wings of the scenery of the stage; there are angles and corners of other buildings beyond these again, so that the eye dodges from projection to recess, from recess to projection one after another in unequal steps successively, and as the opening grows narrower and narrower, as it cuts deeper and further back, the sight is at last either lost in a pillar of darkness or rests on the clear, perceived through an upright slashing between the walls. These large openings in the side of streets, which afford such town vistas, are generally temporary, and are soon built up, we would propose making them (or something of the same kind, but perhaps more ornamental) permanent.

We build too much on the simple system of adding house to house and street to street, and designing single buildings alone. Our architects are too moderate in their ambition; they are content with getting a church, a hall, or a hospital to design, when they should aspire to the whole quarter of a city. One mind is confined to the planning of a block of houses which should have scope given it in plotting for the erection of a suburb. Genius is cramped and shut in; there is no outlet for a happy thought,—no room for a long shot ahead,—no chance of bringing out a harmonious symphony of buildings in a cordon.

The architect should work out his finest effects of chiaroscuro, not on a solitary building, but on a whole street or square of houses. It is the privilege of ruins to present large sheets of light amidst the black recesses of the angles of their walls. Should the architect attempt to produce a similar effect in his design, he would find it quite impossible to do so with a single house. In a slated and glazed building no large sheets of perfectly pure light and blue sky can be introduced; but if he has a square of houses or a street to work upon, he can introduce large sheets of light where he pleases, by leaving open spaces between the houses; and he can make these spaces wide or narrow, as may suit, or seem best. If he has a whole quarter of a town to design, he can work with light and shadow on a grand scale.

We should be glad to see an attempt made to work out some of the quarters of our cities as one design, and as one harmonious whole. There is rhythm in architecture as well as rhythm in poetry, and some attempt should be made to maintain it in the one as in the other. As it is to-day there is no absolute certainty even that a *single block* of building will be presented to view in a balanced form, even when it is designed by a single architect, and the whole of it erected at one time. When the one-half is built after the other, and the design of each half is by a separate architect, it is almost certain, such is the neglect of rhythm in architecture at the present day, that the one-half will not balance the other. A very common thing to see is one half of a block of buildings in the Gothic and the other half in the Italian style of ornamentation. When a professional architect is called upon to prepare a design for a building to be put down by the side of the design of another professional architect, instead of trying to make his design harmonise with that of his professional brother, and, exerting a legitimate rivalry, he frequently tries to prepare one which will drown his brother's design altogether. But by setting the elevation of the one house at variance with the other, the effect produced is generally like placing a blue and green light side by side,—the eye is set blinking, and can settle on neither. Thus the architect defeats his own object in such a case.

Where there is a city architect, he should be invested with a certain power of control over the styles of architecture to be introduced into particular localities. It would add to the character of a city if some of its quarters were carried out architecturally, as harmonious wholes; and I could even name spots where the genius of one designer has dominated and produced a balanced and harmonious set of elevations. The effect is at once striking and satisfactory.

The view of the great street of a great city when it is empty of carts and carriages, and heavy traffic,—on a Sunday or holiday, or in the early morning,—the view of the great street of a great city is imposing, and gives expansion to the mind. It stretches away in a long vista, the sides of which are composed of countless buildings, with innumerable doors and windows, and posts and pilasters on either hand. In the principal part of the street there is a grand building, it may be the Town-hall or the Exchange, with a row of great steps stretched across its base, and above that a colonnade of tall, graceful, commanding pillars, upon the top of which rests a noble architrave. On the pavement in front of this grand edifice stand statues of the mighty men of old, and in some quiet nook, represented in the finest whitest marble, the graceful figure of a damsel or two,—

> "High in the air, 'over that very porch,'
> Four steeds divine,
> That strike the orb resounding with their feet,
> Forth from their nostrils snort ethereal flame."

But, alas! we can scarcely obtain the view of the great street of a great city now,—without a shadow coming between us and the end of the view. The gloomy girder railway-bridge interrupts the line, and breaks the continuity of our principal street and leading thoroughfares. It also disfigures the river view of the city, and displays its unseemliness and deformity by the very side of our handsomest over-river bridges,—the masterpieces of Rennie and Telford.

Another difficulty the landscape builder has to contend with is the passion for economising space, and the confirmed habit of filling up every available inch of building-ground in the heart of the town. No sooner is one building pulled down by city improvers to give light and air to one closely-packed portion of the town than another open place is covered and built up in another portion of it. And unless the law for providing light and air to all tenements be made stricter than it is, this kind of work is sure to go on to the deterioration of all amenity, and the closing up of the view of all architectural beauty.

City improvement, however, is a subject on which I do not propose to enter. W. Y. B.

NEW BUILDINGS IN VICTORIA-STREET, WESTMINSTER.

QUEEN'S MANSIONS.—ARMY AND NAVY HOTEL.

THE vacant land on the north side of Victoria-street, Westminster, has for the most part been now covered with spacious buildings, consisting largely of residential blocks in flats for the upper classes. A very extensive block, designated Queen's Mansions, is at present in course of erection, and almost completed externally. It is situated immediately opposite to the Army and Navy Co-operative Stores, having a frontage to Victoria-street of upwards of 150 ft., and is very lofty, containing five floors, the elevation being carried to a height of between 75 ft. and 80 ft. The materials are red brick, with a profusion of Portland stone dressings and window ornamentation. Massive bay windows, projecting considerably beyond the main face of the frontage, are carried up in succession from the ground-floor to the upper floors of the building, and at the foot of each floor window there is a prominent stone balcony. The building internally is intended to be artistically decorated, and to comprise spacious suites of family apartments on each floor, which will have the advantage of a lift in addition to the staircase approaches.

On the same side of the street eastward, a site has been secured on which the new Army and Navy Hotel is about to be erected. For the purposes of this new building the greater portion of the site of Palmer's old almshouses has been purchased. These almshouses, which were first established and built in 1650, but rebuilt in 1817, are now in course of demolition. The site of the buildings and gardens extends in depth from Victoria-street, Chapel-street, Broadway, northwards, the Victoria-street frontage being about 60 ft. in length. The new hotel will cover a large portion of the site until recently occupied as the almshouses. It is stated that in place of the old dwellings now being taken down, the trustees are about to erect new almshouses in Rochester-row. The new hotel, for the special use of the two services, is intended to be of large dimensions, and its erection is to be commenced as soon as the ground is cleared.

Although, as above stated, the vacant land in this important West-end thoroughfare is being occupied by new buildings, it should be added that there are at present two huge and dismal-looking blocks, which are best described as unfinished carcasses, the works at which are for the present, at least, suspended. One of these, at the western end of the thoroughfare, not far from the Victoria Railway Station, is a massive and substantial building entirely in Portland stone, upon which, it is said, upwards of 15,000*l.* have been already expended. Externally the building has been completed, with the exception of the carving and sculpture on the main frontages, but the interior work remains to be done. It is intended as residential chambers, similar to the "Members' Mansions" a little further eastward. The other unfinished building, the works at which have also been stopped, is a large red-brick structure of about 140 ft. in length, and five stories in height, showing nothing more than the shell. It is stated to have been originally intended for a co-operative store.

VALUE OF FREEHOLD PROPERTY IN HATTON GARDEN AND CHARTERHOUSE LANE.

ON Tuesday, Messrs. Debenham, Tewson, & Co., offered for sale, at the Auction Mart, two freehold properties, situated in the neighbourhood of Hatton-garden and Charterhouse-lane, respectively. The property in the locality of Hatton-garden comprised a building of five floors in Charles-street, at the corner of Great Saffron-hill, close to Hatton-garden, and the recent improvements in that neighbourhood. The property, which covers an area of 1,965 superficial feet, was said to be very substantially constructed of stone. The premises are let on lease to Messrs. Wyman & Westwood, wholesale druggists, for the residue of a term of twenty-one years from June, 1879, at a rental of 400*l.* per annum, the lessees undertaking to repair, pay insurance premiums, and all usual outgoings. There was a close competition for the property by several bidders, and it was ultimately sold for 7,300*l.*

The property in the neighbourhood of Charterhouse-street comprised the premises Nos. 24 and 25, Charterhouse-lane, situated immediately opposite the Metropolitan Meat Market, having a frontage of 22 ft., and occupying an area of 770 superficial feet. They were said to be let on lease for a term of fourteen years from June, 1872, at a rent of 60*l.* per annum. It was stated that the property was of greater value as a site for a more important building. The first bid was 2,000*l.*, the offer being rapidly brought up to 3,250*l.*, at which it was sold.

The Hanover Gallery, Bond-street.—The winter exhibition in this bright and commodious little gallery includes 144 pictures, two small pieces of sculpture, and 333 drawings and sketches made for *Punch* by Tenniel (5), Sambourne (10), Keene (105), and Du Maurier (213). The largest work amongst the pictures is a painting by R. B. Browning, "The Delivery to the Secular Arm" (No. 5), which displays a higher aim and more technical ability than the painter has before shown. Pictures by Messrs. Millais, Watts, Val. Prinsep, Boughton, Alma Tadema, Marks, Sir F. Leighton, and some other eminent artists, are in the collection.

ENGINEERING EXHIBITION AT ISLINGTON.

The Engineering Exhibition at the Agricultural Hall, Islington, opened on Monday last, is perhaps the least successful of the trade exhibitions which have been held there of late. It is certainly by no means so large and so fairly representative a collection of materials and appliances as were the Building Trade and Printing Exhibitions. There is very little machinery in motion, and the area of the hall is only partially occupied, although what we heard characterised as "peepshow business" is more largely represented than in the previous exhibitions of the same series. Besides peepshows pure and simple, there are exhibited such things as the *Little Western* dory-boat (in which cockle-shell of a craft two men were foolhardy enough to cross the Atlantic from America not long ago), spring mattresses, cooking-stoves, stove-polish, toilet-soap, cement for mending broken glass and china, Indian hearthrugs, gas-burners, "non-alcoholic champagne," broughams, and a number of other materials or products that have little or no relation to the asserted object of the exhibition. The two largest and best displays are made by Messrs. S. & E. Ransome & Co. and Messrs. Moser & Son. The former firm have a good display of hoisting crabs for builders' use, screw-jacks, sack-hoists, saw-benches, emery-wheels, "free-grit" and "annular" grindstones (made of Ransome's well-known artificial stone), and a good collection of engineering tools of every description, including their new "crucible cast-steel" spanners, which possess the merits of strength, lightness, and cheapness. The stand occupied by Messrs. Moser & Son is interesting not only by reason of the extent and variety of the machinery and appliances exhibited, but because it forms almost a small museum of specimens illustrating the fracture and behaviour under various tests and modes of treatment of "S. C. Crown" and "H.P." iron. The specimens of the former brand exhibit in their fracture a strong fibrous texture; while examples of the latter brand of iron (which is manufactured by Messrs. Moser themselves) are put forward as evidence in support of their statement that the material combines in itself the characteristics of both steel and copper. Mr. E. S. Hindley, of Bourton, Dorset, exhibits some portable combined vertical engines and boilers, together with horizontal engines and a circular saw-bench. Messrs. Smith & Coventry exhibit their patent "open-spindle capstan-rest chasing lathe," which makes screws, studs, pins, &c., from the bar with once chucking. The same firm also show drilling, milling, and drill-grinding machines. Messrs. Thomas B. Jordan & Son exhibit their patent pulverising-machine, for crushing and pulverising emery, granite, limestone, flints, cements, &c., to any degree of fineness without the use of sieves. The degree of fineness of the material leaving the machine is regulated pneumatically. Messrs. A. Lusty & Co. exhibit band-saws and band-sawing machinery. The Rustless and General Iron Company (Messrs. James E. & Samuel Spencer) exhibit "Anti-corrodo" tubes and fittings of all kinds, treated by Barff's "anti-corrodo" rustless process. Mr. James Hardinge exhibits the "Swiftsure" wood-working machine, together with "Hurricane" portable forges and other workshop and portable plant. Among other exhibits more or less directly of interest to the building trade are the paints of the Indestructible Paint Company; Jeyes's "Concentrated Creosote" (used in tanks of boiling water with the view of preserving timber); Messrs. Ewart & Son's "Empress" ventilator, their "Crown" boiler for baths, &c., and their "Amethysta" gas-stove for warming and ventilating by introducing a continuous current of fresh warm air into apartments; Messrs. Robert Boyle & Son's self-acting "Air-Pump Ventilators"; Messrs. Maryon & Co.'s self-acting lattice shutters and grills for shop-fronts and private houses; Balmain's luminous paint; Messrs. W. Smeaton & Sons' patent "Eddystone" water-closets, and their machine-made cast-lead "Eclipse" traps; McHaffie's, Sharp's, Kite's, and other ventilators; the "Otto" and Bisschop's gas-engines; Hodson's patent rotary steam-engines; Hamilton's patent prismoidal lights, stall-boards, &c.; and, to bring this list to a close, Spence's metal, exhibited by Messrs. J. Berger Spence & Co. The capabilities of this material, practical as well as artistic, were fully described in a paper read before the Society of Arts early this year by Dr. Granville Cole, and reported by us at the time.* Its practical uses include its employment, in lieu of lead, for jointing gas and water mains, and for fixing ironwork in stone, &c. Its artistic value is sufficiently attested by the display made by Messrs. Spence in the Agricultural Hall, which includes some bas-reliefs, medallions, and a bust of Sir Henry Cole. The "Crown Jewel" stove is as peculiar in appearance as the problem which it seeks to partially solve is important. It is an American invention, and it claims to be absolutely smokeless; it only burns anthracite coal or coke. It somewhat resembles in form an ornate but gigantic lantern, resting on a stand, the fire being enclosed in a basin-shaped grate, and visible all round through the talc windows which constitute the bulbous or lantern-like portion of the stove. It is charged with fuel by means of a vertical cylinder easily got at by the removal of the top cap. This fuel cylinder being fully charged, the stove burns for a long time without attention; for as fast as the fuel is consumed by combustion, the grate is automatically replenished from the cylinder. There are many other things which we have not space to mention. The exhibition, which closes this (Saturday) evening, has not been very numerously attended.

THE GLASS TRADE IN ENGLAND.

At the suggestion of Mr. G. R. Crickmay, architect, of Weymouth, who had grieved over the knowledge that a large and increasing quantity of glass for building purposes is imported into this country, and was naturally anxious that our own country should not only supply itself, but stand first in the estimation of the consumers in every country, the Worshipful Company of Glass Sellers have offered substantial prizes for an essay on "The Past and Present Position of the Glass Trade in all its Branches, and Suggestions for Improvement in the English Trade," and propose to give a gentleman of authority 25*l.* for adjudicating on the respective merits of the several essays.

It seems to us that instead of referring the essays to one person they should refer them to a committee of three, or at any rate two, representing the technical aspect of the question, the art aspect, and the commercial aspect. The Company would probably find competent persons who would undertake this without a fee. One other suggestion we would make, which is, that instead of offering three premiums, as is proposed, the whole sum at their disposal should be offered for the best essay. This course would be more likely to bring the right man into the field.

VALUE OF OLD SION COLLEGE SITE.

According to the sums realised for a number of building sites on the Sion College Estate in Aldermanbury, which were let on lease last week for a term of eighty years, at the Auction Mart, by Messrs. Fox & Bousfield, the governors of the college are likely to be put into possession of a very large annual income, representing a capital sum which will be comparatively little affected by the cost of the intended new college buildings on the Thames Embankment. The sites let last week were seven in number, containing altogether an area of 7,500 ft., and consisted of the land upon which the president's house and a number of shops and other ancient structures fronting London-wall and Aldermanbury until recently stood. Four of the sites immediately adjoin St. Alphage's Church, and a question of ancient lights as affecting this edifice arose in connexion with the intended new warehouse or other buildings, but this has been arranged.

There was a very numerous attendance at the letting of the sites last week, and in order to show the restrictions under which the new buildings are to be erected, a model, pointing out the same, was exhibited in the room, and explained by the auctioneer. The sites were all quickly let; the four sites in Aldermanbury-avenue, extending in depth to the church, realising 310*l.*, 150*l.*, 125*l.*, and 130*l.* each, or 715*l.* per annum altogether; and the three sites facing London-wall being let for 230*l.*, 230*l.*, and 300*l.* per annum each, together 760*l.* per annum, or an aggregate sum for the seven sites, containing 7,500 superficial feet, of 1,475*l.* per annum. The entire site of the college and grounds, which will now shortly be covered with buildings of a mercantile character, is about an acre in extent, and supposing the remaining sites to be let at the same rate as those which were disposed of last week, the Governors of the college will ultimately derive an annual income from the site of about 7,400*l.* per annum, the whole of the site, according to the history of the college, having originally been purchased, in the seventeenth century, for 2,450*l.*

Capitalising the above annual sum at twenty years' purchase gives about 150,000*l.* as the present value of the freehold of the site, but it was observed at the letting last week that a fairer estimate would be twenty-five years' purchase, which would represent as its present value, 185,000*l.*

* *Builder*, vol. xxxviii., p. 215.

LIVERPOOL ARCHITECTURAL SOCIETY.

The annual dinner of this Society was held on Tuesday, the 5th of October, at the Alexandra Hotel, Dale-street, forty-four members and guests being present, among the latter Mr. J. Murgatroyd, president of the Manchester Architectural Association; Mr. J. Holden, hon. secretary of the Manchester Society of Architects; Mr. Alexander Ross, president of the Liverpool Engineering Society; and Mr. J. C. White, president of the Liverpool Master Builders' Association.

The first ordinary meeting of the society was held on the following day, October the 6th, the president, Mr. Charles Aldridge, F.R.I.B.A., in the chair.

After the election of members, and other business, the report of the visitors on last session's work by members of the class of construction and design was read, the first prize being awarded to Leonard J. Pilkington, and the second to Constantine Phillips. The President then read his opening address, of which the following are the preliminary remarks:—

"We commence to-day the thirty-third session of this society, which I need scarcely remind you has the privilege of seniority amongst all the provincial architectural societies, a fact of which I think we should be proud. During the thirty-three years since the society was founded it has had no doubt its ups and downs,—periods of success and depression,—but I think I may venture to say that at no time has it been more prosperous or better supported by the profession in Liverpool than at the present. We now number 138 members, composed of forty-seven Fellows, twenty Professional Associates, thirty-five Associates, thirty-two Students, and four Honorary and Corresponding Members.

Prosperity, however, is often as trying as adversity: at the one time we are apt to despond, and give up endeavouring to improve matters when they seem so hopeless, and at the other time we run into the danger of following a similar course, by the very reason of our success, thinking we have gained the summit of our ambition; but should we not seize the present opportunity to look around us and see what we can do to enlarge the sphere of our society, and attract others to join us? We must not rest content until we have induced every architect and architectural student to become a member, and surely there is no reason why this should not be. There is another way by which we can add very much to our usefulness, and that is by increasing the work done by the educational branch. The class of design and construction, which was commenced three years ago, has now, I am glad to say, become sufficiently strong in numbers to warrant us undertaking a course that I have contemplated for some time, and which will, I hope, be carried out this session if I can get the necessary support from the Fellows and students. It is proposed the class should meet fortnightly instead of monthly, and that at each alternate meeting a short course of instruction be given on construction. These lectures might be arranged in the same way as a specification, so that the course during the present session might comprise all the trades, commencing at excavator and bricklayer. I have drawn up a syllabus of these lectures, together with a list of subjects for the class of design, and I hope on this day fortnight the first lecture will be given."

Free Lectures: Parkes Museum.—In response to a suggestion made to the Executive Committee by the Nineteenth Century Building Society, the following course of lectures on "Dwelling Houses," largely descriptive of articles and apparatus in the Museum, will be delivered in the Museum, University College, Gower-street. The admission to the lectures will be by free tickets, which will be distributed through the agency of the metropolitan building societies. December 11th, "Situation and Construction," by Edwd. C. Robins, F.S.A.; January 8th, 1881, "Ventilation, Lighting, and Warming," by Edwd. C. Robins; January 22nd, "Water Supply and Filtration," by Prof. W. H. Corfield; February 5th, "Drainage," by Rogers Field, C.E.; and February 19th, "Water-closets, Sinks, and Baths," by Prof. W. H. Corfield. Each lecture will commence at half-past three in the afternoon.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

The thirty-third anniversary festival in aid of the funds of this deserving Institution was celebrated on Thursday, the 11th inst., at the Freemasons' Tavern, Mr. Thomas F. Rider (of the firm of Rider & Son, Union-street, Borough) in the chair, supported by Mr. Edward I'Anson, F.R.I.B.A., Mr. George Plucknett (Cubitt & Co.), Mr. John Hebb (Assistant Architect, Metropolitan Board of Works), Mr. ex-Sheriff Burt, Mr. E. B. I'Anson, M.A., Mr. F. J. Dove (Dove Brothers), and about 250 other supporters and friends of the Institution.

The usual loyal and patriotic toasts were duly honoured, the Chairman, in proposing that of "Prince and Princess of Wales and the rest of the Members of the Royal Family," remarking that their Royal Highnesses the Prince of Wales, the Duke of Connaught, and Prince Leopold, might almost be claimed by the builders as belonging to their trade; for were they not all three most excellent Masons? and was not masonry one of the most important departments of building work? In proposing the toast of "The Army, Navy, and Reserve Forces," he observed that the Navy, like the building trade, had been somewhat interfered with by the introduction of iron in place of wood.

Major Brutton, in responding for the Army and Navy, referred to the ill-fated *Atalanta*, and paid a warm tribute of praise to her commander, Captain Francis Stirling, with whom he (the gallant Major) had served for three years. The foundering of that vessel was, he was quite sure, due to no want of skill in seamanship on the part of her captain.

Captain Bird responded for "The Reserve Forces."

The Chairman, in proposing the toast of the evening, "The Builders' Benevolent Institution," said: "At a preliminary meeting of the various branches of the building trades, called together by Mr. Thomas Cozens, of 17, Lissongrove, North-street, Marylebone, on Wednesday evening, January 27, 1847, at the 'King Alfred' Tavern, Lisson-grove,—present, Mr. Cozens, stonemason," and nineteen others, consisting of three builders, three carpenters, two bricklayers, two plumbers, two ironmongers, one grainer, one paperhanger, two timber merchants, one lead merchant, and two whose occupation is not stated,—"for the purpose of forming an association for the relief of decayed masters connected with the building trades, Mr. Cozens having been unanimously elected to the chair, the objects of the meeting were taken into serious consideration, and various discussions took place, when it was proposed by Mr. George Chamberlain, lead merchant, seconded by Mr. Ferguson, paperhanger, and unanimously resolved, 'That the gentlemen present should form a committee, provisionally, for the purpose of carrying out the objects of the Institution," and Mr. William Grubb was appointed secretary *pro tem.*'" Such, gentlemen, is the entry in the old minute-book with regard to the formation of this Institution. Various committee meetings were then held, and on the 22nd of February the title of "Builders' Benevolent Institution" was settled upon. On the 29th of March the first committee was appointed, amongst whom were Mr. Cozens, the founder; three of the Messrs. Bird (two of whom for so many years did excellent service to the Institution),—and, by the bye, other birds have also been great friends to the Institution, including the Condor and the Dove; Mr. Ebbs (whose widow has been since 1877 a pensioner of the charity); and Mr. Richardson, who, as many of us will remember, has often told us that he was at the formation of the society. Mr. Biers, who was president of the Master Carpenters' Society, seems to have been the first president, for I find that on the 19th of July they did what all new institutions must do, had a great public meeting, which was held at the old Freemasons' Tavern,—present, Mr. Biers in the chair, supported by Lord Robert Grosvenor, M.P., Lord Dudley Stuart, M.P., Col. Thomas Wood, M.P., Sir Benjamin Hall, M.P., Mr. David Salomons, Mr. Geo. Cochrane, and a large number of influential representatives of building interests. The chairman made a capital speech, beginning, of course, by expressing the usual wish that some one more able had been found to preside. That is my own wish to-night. He pointed out the many risks and difficulties attending the building trade, and after going into a most glowing description of the likeness between the builder's trade and the calling of a sailor, concluded by proposing that as soon as 4,000*l.* had been subscribed, operations should be commenced, and also that when 5,000*l.* more had been separately collected for the "Builders' Almshouses," they should be commenced. This and other resolutions were carried, and I notice amongst the names of those supporting them George Spencer Smith (grandfather of Mr. H. G. Smith, known to us all), and Joshua Higgs (the father of Mr. W. Higgs, our president a few years ago). On the 30th of July the first application for a pension came from one Robert Wright, but he was informed "the funds did not admit of it." An appeal was issued to the trade on behalf of the Institution, attached to a copy of the rules. Mr. George Bird was elected treasurer,—an office which he continued to fill until 1861,—a period of twenty-four years,—when our excellent friend Mr. Plucknett succeeded him. In August of the same year (1847), nineteen applications were made for pensions, and of the applicants, fifteen were approved as candidates. On the 30th of that month it was decided that the pensions should be from 10*l.* to 30*l.* per annum,—a sufficiently wide margin; that, at the discretion of the committee, on the death of a pensioner, his pension might be continued to his widow; and that temporary relief might be granted to orphans. In November, 1847, 200*l.* Stock was bought. The next matter of importance was the determination, in 1848, to have an annual dinner, and on the 19th of July was celebrated the first anniversary of the foundation of the Institution, and it may perhaps interest you to know what the arrangements of the committee were for the entertainment of the guests. I find that it was finally arranged,—"That the dinner should consist of soups, fish, meat, poultry, and vegetables in season, two 'fires' of champagne, port and sherry *ad libitum*, coffee or tea, soda-water, ginger-beer, &c.; that the ladies in the gallery should be provided with 'a *déjeûner* of cold viands, wine, ginger-beer, soda-water, coffee, or tea," that vocalists were engaged, and "Mr. Day asked to furnish an instrument for the night." Lord Robert Grosvenor, M.P., was in the chair, and the whole of the proceedings seem to have passed off most amicably, for there is no entry of them in the minute-book.* In October it was resolved, on the suggestion of Mr. Joseph Bird, that a series of balls should be given, the profits to be appropriated to the funds of the Institution, and the first one did take place on the 19th of January, 1849, resulting in a profit to the Institution of 20*l.* 12*s.* 6*d.*, and from that time for twenty-four years an annual ball took place under the supervision of Mr. Joseph Bird. They have continued to be given. The next one will be held at Willis's Rooms, St. James's, on the 27th of January, 1881, and Mr. Keeble will be very glad to receive the names of any gentlemen willing to become stewards. On the 4th of December, 1849, it was decided that the pension should be 24*l.* per annum, and that as soon as the subscriptions reached the sum of 250*l.*, half that amount should be spent in pensions, and the rest funded. In May, 1849, Mr. Grubb, the secretary, resigned, and the late Mr. A. G. Harris (whose invaluable services to the Institution many of us remember) was elected to that position. On the 30th of July the second annual meeting was held, when Mr. Biers was re-elected president; an election for five pensioners fixed to take place at the end of October in the same year, and the amounts of the pensions settled to be 24*l.* per annum for males and 20*l.* per annum for females. On the 29th of November the election was held, when four men and one woman were placed on the funds of the Institution. From that time the progress of the Institution has been steady. Year by year men well known in the building trade have occupied the position of president,—Mr. William Cubitt, afterwards Lord Mayor of London, being the first, followed by Sir Samuel Morton Peto, Messrs. Charles and Thomas Lucas, Messrs. Lawrence, Mr. Trollope, Mr. Plucknett, and others. The money collected for the purpose of building almshouses, after many discussions was at last, with the approval of the subscribers and the consent of the Charity Commissioners, added to the Relief Fund, which now reaches the sum of 21,400*l.* The pensions, through the indomitable perseverance of my predecessor (Mr. F. J. Dove), have been raised to 39*l.* for men and 30*l.* for women, necessitating, of course, a much-increased outlay. One hundred and eighteen persons have enjoyed the benefit of the pensions, and there are now more than fifty on the books. For the next election, which will take place on the 25th inst., there are nine candidates,—five men and four women. Gentlemen, I have roughly sketched for you the rise and progress of the Institution on whose behalf I now appeal to you, and I am afraid I have somewhat trespassed on your time, but I have been told that from its formation no account of its origin has ever been given on such an occasion as this. The building trade, as those who are in it well know, is one exposed to enormous risks. Strikes and lock-outs,—those barbarous expedients with which it is attempted to settle disputes between masters and men; unhealthy competition, that bane of commerce in all times; accidents through the carelessness of workmen; bad weather, and many other things, combine to render the building trade one of the most precarious in existence. In proof of this I may mention that one of the present applicants for a pension is the widow of a builder formerly on the committee of this Institution, and a liberal donor to the charity, and we soon expect to receive a similar application from the widow of a late partner in one of the largest building firms in London, who was ruined in carrying out a large contract at the West End. I appeal, then, to the master builders of London to support this Institution, on the ground, partly, that they may, some of them, some day or other require the assistance which it is able to give. I appeal to them on the ground that those who are engaged in the same business as themselves have a prior claim on their charity. I appeal to the merchants connected with the building trade to do what they can for us; and lastly, I appeal to all to help us to make the Institution one of the largest and best charities of the charitable metropolis of the world. I beg to propose "The Builders' Benevolent Institution," coupled with the name of Mr. George Plucknett, its respected treasurer.

Mr. Plucknett, in responding, said he could only hope that the very enthusiastic manner in which the toast had been received was an augury that the company intended to enable him, as treasurer, to meet the Institution's liabilities for the coming year with ease. When their late president, Mr. Dove, expressed his desire to see the amount of the pensions increased, the proposal met with his (Mr. Plucknett's) cordial concurrence, and at the annual general meeting held in July, the question was fully discussed, and the increased pensions decided upon. At that meeting they had the satisfaction of receiving a communication from Mr. George Godwin,—a gentleman well known to almost everybody in the building trade,—saying that he entirely approved of the proposed increase in the pensions, and offering to subscribe ten pounds a year for ten years towards that object if nineteen other gentlemen would do the same, and so guarantee an increased income to the Institution of 200*l.* per annum. He hoped that Mr. Godwin's offer would not be lost sight of. Considering the vast interests of the trade which it represented, the Builders' Benevolent Institution ought to be one of the best-supported charities of the metropolis. When he stated that there were about 700 charitable institutions of a similar kind in the metropolis, with a yearly income of more than 3,000,000*l.* sterling, he thought it was not too much to hope that the builders of London would see to it that their charity continued to maintain its position. In conclusion, Mr. Plucknett said that the Institution had never had a president who had taken greater interest in it than Mr. Rider had done.

The Secretary (Major Brutton) then read a list of subscriptions and donations amounting, as we stated last week, to 1,014*l.* 16*s.*,—a larger sum than has been obtained for many years past.

Mr. Edward I'Anson, in proposing the toast of "The Chairman and President," said he had the greatest pleasure in proposing Mr. Rider's health. He had for fifty years or more known Mr. Rider's firm,—Mr. Rider and his excellent and respected father. The name of Rider in

* A full report of the proceedings at this dinner will be found in our volume for 1848, p. 356, and a report of the foundation-meeting, previously referred to by the chairman, in the volume for 1847, p. 353. In fact, the early history of the Institution can best be read in the *Builder*, without the advocacy of which at one particular moment the endeavour to found it would have collapsed. In the notice of the foundation meeting it will be seen the chairman, Mr. Biers, proposed a special vote of thanks "to the editor of the *Builder* for bringing this Institution before the notice of the public."

his (Mr. I'Anson's) office had always been a household word. There had never been a year for fifty years past in which Messrs. Rider had not been carrying out works for Messrs. I'Anson. He had not only known the Messrs. Rider for the long period mentioned, but he had learned to respect them. All that they had done had been done with the utmost ability and honesty, and he had therefore reason to speak in the most complimentary way of them. The toast was very heartily received, and the chairman having briefly responded,

Mr. Glanvill proposed "The Vice-Presidents and Trustees," coupled with the name of Mr. F. J. Dove, who briefly replied, expressing his thanks to the President for the efforts which he had made on behalf of the Institution. It was satisfactory to know, from the amount of the subscriptions and donations announced, that those efforts had been crowned with a success which would not only make it easy for the committee to pay the increased amounts of the pensions, but would possibly allow of the election of more pensioners.

Mr. Ex-Sheriff Burt, in proposing "The Architects and Surveyors," said he was delighted to see so many architects present and taking an interest in the Institution. The architects and surveyors of the metropolis played a most important part in the life of the great city. They frequently were beset by apparently insuperable difficulties, but they generally succeeded in satisfactorily surmounting them, and, as a rule, builders and contractors had very little fault to find with the way in which they were treated by the members of those professions. With the toast were associated the names of Mr. Edward I'Anson and Mr. Franklin.

Mr. I'Anson, in responding, said it gave him very great pleasure indeed to meet so large a gathering of so important a community as the builders of London. The builders on the one hand, and the architects and surveyors on the other, were engaged in setting in motion a large mass of people, who were all, it was to be hoped, honestly and diligently seeking to promote the best interests of the great commonwealth to which they belonged by producing good and perfect buildings. He had been now labouring nearly fifty years as an architect, and he had never had any disagreement with any builder who had carried out works for him. Indeed, he had always found that his works had been excellently carried out by his friends, the builders.

Mr. Franklin also responded, observing that he was very pleased to hear Mr. I'Anson express himself with so much satisfaction as to the way in which the builders of London did their work. He (Mr. Franklin) would fain look forward, as many others did, to a very good time coming for the building trade; but it was his decided conviction that that good time would only arrive when builders would refuse to make tenders upon quantities that they could not possibly rely upon or understand. When that time arrived the trade would become so prosperous that it would think nothing of subscribing even a much larger sum than 1,000*l.* to the funds of the Institution.

The only remaining toast was that of "The Committee and Stewards," coupled with the names of Mr. T. G. Smith and Mr. Randall, who briefly replied.*

NEW CHURCH AT DUDDO, NORTH-NORTHUMBERLAND.

On Tuesday, the 9th inst., the new church that has been in course of erection since the autumn of the past year, when Louisa, Lady Waterford, laid the foundation-stone, was consecrated by the Bishop of Durham. About twenty clergymen, including the Archdeacon of Lindisfarne, the Hon. F. R. Grey, and the Vicar of Duddo, the Rev. Beverley S. Wilson, assisted in the ceremony, which was performed in the presence of a large congregation which completely filled the edifice. The church is placed on a slope by the roadside, near the vicarage-house, in a wide wild tract of country surrounded by hills, and is built of the excellent stone of the district which has in it many of the beautiful tints of Sandown. The church consists of a nave, 46 ft. by 25 ft., and chancel, 25 ft. by 20 ft. At the west end of the nave is a tower, capped by a bell-turret; and on the north side of the chancel is a chamber for the organ and a vestry. To this plain and simple outline satisfactory architectural effect is given by the details of the windows, which are enriched with tracery, and filled with lead patterned glazing. The niched doorways help the effect. In the interior the open-timbered roofs, each compartment of which gets richer as it approaches the east end, the columniated chancel-arch, the pulpit of open-panelled work, and the communion-table of similar perforated woodwork, add to the general air of unity. The chancel is furnished with stalls to seat twenty, and the nave is seated with rush-bottomed chairs for the accommodation of 158.

Owing to the low prices which obtained at the date of the competitive tendering, in consequence of the existing depression in the building trades, a church of some architectural effect has been produced at a very small cost.

Mr. F. R. Wilson, Alnwick, is the architect. The contractors were:—Mr. H. Elliot, mason, Horncliffe; Mr. A. E. Burn, joiner, Spital; Mr. J. Turner, slater, Horncliffe; Mr. R. Sidey, plumber, glazier, and smith, Tweedmouth; Mr. A. Robertson, painter, Alnwick. A bell, 2 ft. in diameter, wheel, and gear, were supplied by Messrs. H. Watson & Son, Newcastle-on-Tyne.

* We are pleased to be able to add that (as will be seen by an advertisement in another column), in consequence of the generous support accorded to the Institution at this dinner, four pensioners (two men and two women) will be elected on Thursday next, the 25th inst., instead of one man and one woman, as formerly arranged.

PALÆOGRAPHY.

There are in the British Museum Library, to which institution I referred in the *Builder*, No. 1,952, various collections of MSS. accessible and well preserved. Many of these, however, and MSS. in other collections, are difficult to decipher. Probably most of them can be deciphered only by experienced experts. Occasionally a rare MS. is construed and issued by the Camden Society, &c., or extracts are contained in some volume. The comparison of a printed translation with an original document clearly denotes the truth of this statement. See, for instance, the coronation speech of Henry VIII.,—MS., in vol. i. of Ellis's "Historical Letters," s. 2. It is a subject for regret that such should be the case, because these MSS. are interesting, rare, and valuable, probably. Some of them at least might be printed or copied fairly for public use, selected specially for the purpose, according to the plan adopted in the publication of the Harleian MSS. in 12 vols., 4to. As they are now, many MSS. in the British Museum Library are useless except to experts and the few persons who may be initiated in the art of palæography. Even when a document has been deciphered, it requires a special knowledge to understand the various abbreviations. A glossary generally is appended for this purpose, of which there are specimens in Cole's "Historical Documents," folio, 1844, and in Wright's "Court Hand Restored," &c. The ordinary reader would find it difficult to decipher even John Milton's "Common-Place Book," of which there is an autotype copy with a translation in the British Museum Library, and yet that is comparatively easy to unravel. The Hargrave MSS. in this collection contain various specimens of orthography, ancient and modern. Some of these are easy to decipher, while many of them are only to be unravelled by experts if at all. Hence many of these volumes are sealed books as to the public, and are likely to remain so, although bought at a high price. An intended work upon palæography some years since was expected from Mr. R. Sims, of the British Museum MS. department, but it has not yet appeared. I believe that the works extant upon this subject are (1) Astle's "Origin and Progress of Writing," reprinted recently by Chatto & Windus; (2) Madox's "Formulare Anglicanum"; (3) Casley's Collection of MSS. in the King's Library, British Museum Library; (4) Wright's "Court Hand Restored," ninth edition, 1878, by Martin, of the London Record Office, with additions; (5) Chassan's thin octavo volume in French; (6) specimens of inscriptions in churches, &c., are contained in "Bibliotheca Topographica Britannica," vol. vi, and in "A New Boke of Handwriting," 1590, press-mark 1268a, British Museum Library. The Palæographical Society of London have issued rare specimens in folio. In Wright's original preface it is stated that "few persons are to be found capable of reading or explaining old deeds and charters with satisfaction to themselves or others." So it was in A.D. 1773, and probably it is so now. Also, "the Reading of the old law hands is (1773) very nearly, if not altogether, obsolete, though useful." This author then showed the utility of jurists having this knowledge for several reasons, and he mentions several cases in which copies of records produced in Courts of Justice as evidence were rejected as evidence, the originals being extant. The fifth edition of this volume ("Court Hand Restored"), contains extracts from the Returns of Astle and Cayley. Wright's volume includes the old law hands. Some of the specimens are taken from Astle, and in the appendix are ancient names of places in the United Kingdom, and a table of ancient surnames, with an exposition of Latin words, &c. There are many MSS. of the Middle Ages and of more recent date which require additional aid for satisfactory interpretation by the inexperienced reader certainly.

Mr. Astle stated that "the characters introduced by William I. were called Lombardic; but soon afterwards acquired the appellation of Norman characters, generally used in grants, charters, public instruments, and law proceedings, with little alteration until the reign of Edward III. In that of Richard II. variations took place in handwritings of records and law proceedings; the characters used from that time to the reign of Henry VIII. are composed partly of characters called Set Chancery and Common Chancery, and of some of the letters called Court-hand. The Chancery letters were used for all records which passed the great seal; the court-hand in the Courts of King's Bench and of Common Pleas, for fines, placita, &c. These latter came into use about the middle of the sixteenth century, and were continued until about the middle of the late reign, when they were disused. (See 4 G. II., c. 26, and 6 G. II., c. 14, requiring all law-pleadings, deeds, &c. to be thereafter written in English.) They were originally the Lombardic or Norman, but corrupted and deformed so that they bore little resemblance to their prototypes. In the sixteenth century the English lawyers engrossed their conveyances and legal instruments in characters called Secretary, which are still in use."

"Many grants and charters, especially those written by the monks, were in letters called Modern Gothic, which took place in England in the twelfth century. From the latter end of the thirteenth to the seventeenth century, lawyers, when they wrote in the English language, made use of characters derived from Modern Gothic for conveyances, wills, &c., about the middle of the seventeenth century. I think the Set Chancery most durable and proper to be used for patents, charters, &c."

"The character of handwriting of ancient records," according to Mr. J. Caley, "has gradually degenerated from age to age. Thus, the records of the Saxon era, written in Saxon or Latin, are more plain and legible than those of subsequent eras, little obscured with abbreviations which have created doubt and ambiguity in after ages, particularly in that valuable record, Domesday Book."

From the Norman Conquest until the reign of Henry III. the character is plain and perspicuous. Of this reign (Henry III.) many records cannot be read with facility on account of the intricacy of the character and the number of abbreviations. "The same observations may be applied to records from this reign until that of Edward III. inclusive. From this period downwards, I have experimentally found that less difficulty occurs in reading and translating records; and that the hands used from the reign of Richard II., to that of Philip and Mary, may be read without much trouble. Hitherto each reign appears to have had a set or uniform character. In the reign of Elizabeth and her successors the clerical mode seems to have been in a great measure abandoned, and each transcriber to have written according to his own fancy; and the English records of the sixteenth and seventeenth centuries are in general more difficult to be read than the Latin records of preceding ages." Every word of these statements I believe to be correct; and it is according to my experience.

The remedy for the deficiency is to make palæography a science, like that of book-keeping and stenography: to encourage persons to study it, under advice, and to make it a remunerative profession. No doubt some persons would excel more than others; but that is the case in all employments. Where funds are at hand a selection of documents should be transcribed or printed for public use, and bound up from time to time with an index and a table of contents, in the British Museum, &c., the originals being preserved carefully. C. C.

ACTION BY A BUILDER AGAINST THE EMPLOYER, AND DECISION OF THE HIGH COURT AS TO ARBITRATIONS.

On the 3rd inst. the case of Goodman *v.* Layborn came before the Queen's Bench Division, consisting of the Lord Chief Justice and Mr. Justice Bowen. The action was one by a builder at Ramsgate against the house-owner for extras, and for some work outside the contract, in shoring up a house. The matter came before the Court on two appeals of an interlocutory character, at Chambers, one from a decision of Baron Pollock, in which he had reversed the decision of the District Registrar at Ramsgate, who, on the application of the plaintiff, had ordered the case to be tried before a special referee; the other, from a decision of Mr. Justice Lopes, who had refused an application by the defendant that the statement of defence should be withdrawn and the matter sent to the arbitration of the architect.

Mr. E. S. Roscoe appeared for the plaintiff, the builder; and Mr. Woolf for the defendant.

It was argued for the plaintiff that this was a case which fell within section 57 of the Judicature Act, and required prolonged investigation of accounts, and reliance was placed on the case of Ward *v.* Pilley (5 L. R., Q. B. D., 427), and that it could not be tried before a jury; also that the defendant's application was too late, and that if it were not, the contract did not contain a submission to arbitration, as it was only the usual clause empowering the architect to include extras in his certificate, and that the point was settled by Wadsworth *v.* Smith, 40 L. J., Q. B., 118 (Roscoe's "Digest of Building Cases," p. 8).

The defendant's main contention was that the claim was barred by the clause as to the certifying by the architect, which was a question of law also to be argued before the Court and not before a referee.

After a lengthy discussion, the Court gave judgment, ordering that the action should be tried by an official referee of the High Court, who could, if necessary, refer any question of law to the Court.

THE LONDON LAND COMPANY.

British enterprise has been slumbering during the last ten years. Distrust and suspicion have been in the ascendant. This serious check to progress has had many advantages; we have passed through a serious storm, and while unsound concerns may have succumbed, those whose foundations were strong have received some wholesome lessons. That there is an immense amount of capital awaiting investment is proved by the present price of Consols. Hitherto there has not been a great demand for such capital, although there has been rather a serious crop of Indian gold-mines, which may have absorbed a small amount, but, comparatively speaking, the accumulations remain untouched. A fierce light is now thrown upon all new undertakings, so that unless they are above suspicion they do not command public favour. The announcement of the London Land Company seems to us seasonable. There is unlimited scope for its operations. It is well known that when conducted with care very large profits are realised, especially in the purchase and resale of estates. It is proposed to advance money upon real and leasehold properties. London bankers, more especially since the last panic, have very properly declined to take parchments as securities, and in this respect there is no doubt that they are reverting to the lines of strict banking; but the greatest possible inconvenience has been occasioned to the public. The facilities about to be afforded will be of considerable advantage to those who invest or deal in real property. Loans upon such securities ought to be obtained, to say the least, as readily as upon stocks and shares or bills of exchange. As to the comparative safety of the proposed business, there can be no hesitation. What is wanted, and what will now be supplied, is an establishment on a large scale where men may obtain advances upon deeds of good title, with safety to the lender, and with as much facility as a merchant or manufacturer converts his bills into cash. Having in view this department of business, we observe that it is very prudently proposed only to take money on debentures for fixed periods, since deposits on short notice are always a source of anxiety if not of peril. We have carefully read the prospectus, which appears in our columns, and it is modest in tone, and its strength arises from its simplicity. There is an absence of rash promises. The board of directors comprises men of business, of wealth, and high position,—men, too, many of whose names are not to be found on boards of joint stock companies. The chairman, Mr. V. F. Benett Stanford, is known in connexion with the successful development of his own large building estate at West Brighton, and Mr. Charles Barry's name will have weight with many of our readers.

IMPROVEMENT OF COLOGNE.

The *Kölner Zeitung* has recently given an interesting description of the various plans sent in for the improvements of the city of Cologne, which, as most travellers know, leaves almost everything to be desired as to beauty, or even order. The difficulty of projecting improvements at the same time effective and practicable within the limits of a fortified city may be imagined. If the accepted plan is carried out we are promised a more central situation for the railway station, and that the arrangements in connexion with the steamer traffic on the Rhine will be considerably improved. The different plans (twenty-seven in number) are being exhibited in the City Library, and are being examined with much interest by numerous visitors.

LINE OF FRONT, METROPOLITAN BUILDING ACT.

William Hancock, builder, 52, Leyland-road, Lee, was summoned at Greenwich, before Mr. Balguy, at the instance of the Plumstead District Board of Works, for having, without the consent in writing of the Metropolitan Board of Works, begun to erect a house and shop on the western side of the Brandram-road, Lee, beyond the general building line.

Mr. Grain appeared in support of the summons, and Mr. Laxton for the defence.

The summons was taken out under the Metropolis Local Management Act of 1862, sec. 75, ch. 102.

Mr. Grain said the defendant made application in April last to the Metropolitan Board to sanction the building, but it was refused, as were also several subsequent applications. In face of this and warnings given at different stages of the work, he had now covered in and almost completed the building, and the Plumstead Board had thought it right to apply for an order for the demolition of the building, which was far beyond the frontage in Brandram-road.

Mr. Hansombody, architect, stated in cross-examination, that the frontage of the house and shop was in the High-road, Lee, and only a blank wall, with no entrance, in the Brandram-road. No general line of frontage had been marked out in the High-road, Lee. The land on which this house was built was the property of the Merchant Taylors' Company.

Mr. Balguy, after hearing some evidence, said the only question was what was the line of frontage to be observed—whether that in the High-road or Brandram-road, or both. He should decide that the line of building was where the houses fronted, and in this case,—there being only a blank wall in the Brandram-road,—the line of building was the High-road.

The summons was dismissed.

ARCHITECTS' SPECIFICATIONS IN RELATION TO WOOD.

A writer in the *Timber Trades Journal* is making some observations on this subject which seem to deserve the attention of our readers. He says:—

"Although architects, as a rule, are pretty well acquainted with the other materials required for the erection of buildings,—such, for instance, as stone, brick, iron, slate, and glass,—it appears by the evidence of the general run of their specifications that architects, as a rule, are so imperfectly acquainted with timber and the condition of the timber trade as to not only make in their choice of woods injudicious selections, both on the score of adaptability and economy, but in many instances to present their ignorance concerning it in such an absurd light as to render their specifications absolutely ridiculous to the initiated. What, indeed, can appear more absurd than to specify, as they usually do, that all the wood employed shall be of the best quality, and *perfectly free from sap, knots, shakes, and all other defects?* Best Archangel or Onega redwood, costing at the ports from 17*l.* to 18*l.* per standard, would certainly not fulfil such conditions; and yet the precise words which we have printed in italics are perfectly customary, and, indeed, are nearly always to be found amongst the clauses of an architect's specification. In favour of the retention of the words, it may possibly be urged that it is neither required nor expected that the demand should be fully complied with, and this probably for the best of reasons, because the demand is quite impossible of fulfilment; but if it is not expected that they will be complied with, why, it may be asked, insert them at all, unless for the reason that the owner of the property, or architect, seeks to acquire by them an unfair hold upon the builder, as retaining by the insertion of such words, or clause, the legal right to reject any wood which the builder may propose to use, of however sufficiently good quality? The fact, nevertheless, remains that by the insertion of the clause the fulfilment of an impossible condition is demanded, if not expected or required; and although the architect, knowing the impossibility of fulfilment, may not seek to take any advantage of it; yet an architect prompted by some feeling of pique, caused possibly through some misunderstanding he may have had with the builder on other questions, may, protected by the clause, object to any wood of however good quality, and then it often happens in such a case that the builder seeks to recover part of the loss he suffers from his timber merchant, in the form of a claim for an allowance for inferior quality. It is, therefore, to the interest of the timber merchant as well as to the builder that such a ridiculous and perfectly unjust clause should in the future be abolished from architects' specifications." . . . .

"Another important consideration relating to architects' specifications is that with considerable frequency sizes of wood are specified which, in consequence of their being unusual, can only be obtained by cutting a portion of the wood to waste, in addition to incurring the cost of the sawing required to produce the unusual size specified. Beams 12 in. by 10 in., or 14 in. by 8 in., are often specified, when surely 11 in. by 11 in., or 14½ in. by 7½ in. would do equally well. In cases where beams of such sizes are 12 in. by 10 in or 14 in. by 8 in., are specified builders will generally go to their architect and request permission of him to be allowed to alter the size with a view of economising the timber; but as this permission may be withheld, and the builder being unable to calculate upon it being given, he must base his tenders upon the more costly size, and thus the cost of a building is materially enhanced without any corresponding benefit being derived from the increased cost The worst of it is that the 'slabs' are of little or no value to the builder, and when the timber is sawn at the port, and sent direct to the station nearest the place where the building is being put up, the slabs are not, as a rule, worth the cost of the carriage which would be incurred by forwarding them to the builder's own works, and so as a rule the greater part of the 'slabs' find their way into the furnace. For joists, 2½ in. by 11 in., 9 in., and 8 in. are often specified, and although these sizes may occasionally be met with, yet the difficulty experienced in obtaining them in quantity, usually results in their having to be cut from 3 in. deals, and when this is the case it will be found really more profitable, or rather the least loss, for the builder to put in 3 in. rather than to incur the cost of cutting off the ¼ in. board, which would be of little value, measuring as it would barely above ¼ in. in thickness."

WOOD PAVEMENT.

Parliament-street.—Parliament-street, from Whitehall-gardens, opposite the new Government offices, is at present entirely closed to vehicular traffic, in order to admit of wood pavement being laid down along its entire length to New Palace-yard, at its junction with Bridge-street. A large number of men are employed on the work, which is of a rather heavy character, in consequence of the old macadam roadway having to be excavated to a depth of from 1 ft. 6 in. to 2 ft., and carted away. This material is being replaced by a deep concrete and asphalte foundation, upon which the wood pavement will rest. It is expected that the works, which are being executed by the Asphalte Wood Pavement Company, will occupy about a fortnight or three weeks.

Kensington.—Mr. W. Allnutt, under the title "Wood Pavement on Kensington High-road" (E. & F. N. Spon), has published, as a pamphlet, an account of the method and cost of laying the blocks, with general remarks. Mr. Allnutt claims to be impartial as not belonging to any company.

The Convalescent Home at St. Leonard's. We are asked to notice that the doors here have been fitted with Russell's Patent "Binate" door furniture and locks, supplied by Messrs. Archibald Smith & Stevens.

GLASGOW ARCHITECTURAL ASSOCIATION.

THE first lecture of a course on practical subjects to be delivered by the senior architects of Glasgow to the members of the Junior Society was delivered by Mr. James Thomson, F.R.I.B.A., on Tuesday night, the subject being "Foundations." The chair was occupied by Mr. Honeyman, the Hon. President of the Association, and there was a very large attendance of members.

Mr. Thomson commenced by strongly recommending all engaged in the study of architecture to look about for themselves, and not to be contented with what they could pick up in the ordinary course of their office work. They had all plenty of opportunities of looking at foundations, but perhaps his remarks would enable them to do so more intelligently and profitably. He then described, and delineated on the blackboard, foundations of ordinary and extraordinary character, referred to the precautions necessary where the ground is of unequal firmness, and where running mud occurs,—as it does frequently in Glasgow,—and described various modes of overcoming difficulties which he had adopted in his own practice.

A cordial vote of thanks was awarded to the lecturer.

COMPETITIONS.

Liverpool Institute.—The following designs received for proposed School of Art, November 15th:—

Apollo	Grosvenor
Che Sara Sara	Anchora Speme
Let there be Light (3)	Chacun à son goût
Live in Hope	Half Moon
L. S. A.	Ars Longa Vita Brevis
Economy	Doonie
Faith	Deus nobis hæc otia fecit
Con Amore	Light and Air
Slade	Pour y Parvenir
Progress	Onward
Virens in Arduis	N.N.E. by N.
Merca	Kensington
Simplicity	South Ke sington
Fides	Progrès
Antique	Fiat Justitia
Loco	Cum Martie Minerva
I Strive for Art	Edwin
A' Lorburn	L'traet fran Norr
Corona	Neo Grec
Studio	Spes
Excelsior	School
Excelsior in circle	Hæc Meta Laboram
Finem respice	Cavetto
As you like it	Alberti
Percy	Coup de Main
An Old Boy	Simplex (1)
Lux	Spero (2)
Odil	Plan
Straightforward	Plan in circle
Ex propriis	Art (7)
Courage sans peur	North Light (2)
Desidero Contigere Signum	North Light in circle (2)
Æquanimitas	Light
School of Art	Light in circle
Scuola dell 'Art	Aurora Borealis (2)
Omega	Mersey (2)
Good Light and Air	Ars (3)
Delta	

The sets of designs sent include 598 drawings.

Queen's-town, South Africa.—The premium for the best design submitted in public competition, and connected with the rebuilding of St. Michael's Church, has been awarded to Mr. W. H. Reid, architect, of Cape Town, and formerly of Newman-street, Oxford-street, London. Tenders will shortly be invited, and the work commenced early in the ensuing year. The contemplated outlay is about 7,000*l.*

ENTERIC FEVER AFTER LLANDUDNO.

SIR,—I see in a paragraph which has been copied from your paper that members of a family who spent some time in September at Llandudno have been attacked since their return home by this dreaded scourge, and that it has only shown itself in those who were drinkers of the water of the place. I am an annual visitor at Llandudno, and am not surprised at your report. The water is very soft, and, I believe, pure as it comes to the lodging-houses. The mischief arises there. There may be exceptions in lodgings and private houses, but the state of water arrangements is, I firmly believe, generally as follows.

A cistern at the top of the house, and one only; a water-closet on the first floor, a water-closet on the second floor, with a housemaid's closet adjoining, which has a pipe and tap. This pipe is continued down to the pantry (which is generally behind the hall), where there is another tap, and the pipe is continued down through the floor into the back kitchen, which is below ground, where there is a third tap. From these three taps all the water for washing, filling water-bottles, tea, table use, &c., is drawn. The pipe through which this house supply is drawn comes out of the cistern, as also the pipe which flushes the pans of the water-closets. There is displayed in the hall of each lodging-house an ostentatious card, announcing that the ventilation of the house (no doubt referring to the soil-pipe) is in very way satisfactory, signed by the medical officer. I only wish that when he gave a certificate that the air was free from the pollution of sewage-gas, he had been able to certify that the water supply was equally free.

I only state the facts as I have found and verified them. I make no comment, but hope that this perilous state of things in the largest and most delightful watering-place in North Wales may be thoroughly ventilated.

I enclose my name and address.

SEPTEMBER VISITOR.

SIR,—Having seen in your paper the reports of fever at Llandudno, I wish to add that I stopped there for some days at the end of last July after a holiday in Scotland.

Although perfectly well up to that time, I was soon dangerously ill with typhoid fever, and although I have been unable hitherto to say how I caught it, I must now believe that it was through stopping at this "health resort." A. DANGERFIELD.

53, *Alexandra-road, St. John's Wood,*
Nov. 13, 1880.

LONDON TOPOGRAPHY.

SIR,—I think my friend Mr. Gardner has somewhat mistaken the main objects of the Topographical Society of London. Although "the collection of books, drawings, prints, maps, &c., relating to London topography" is placed first on a list of nine points to be taken up by the society, that position does not signify any pre-eminence over the other eight. The committee are not ambitious enough to hope that they will be able to emulate Mr. Gardner's magnificent collection, but they expect to be able to gather together in course of time a good working collection. An object of more immediate importance than the collection of maps and views is the preparation of a full catalogue of such views, so that we may know where they can be found. But Crace's Collection and the one in the Guildhall Library are catalogued, but there is no printed catalogue of the Crowle Pennant nor of Mr. Gardner's vast stores. Mr. Gardner could help us enormously in the compilation of such an amalgamated catalogue, and I think, if he will do so, he will receive the thanks of even a larger circle than the members of the Topographical Society.

HENRY B. WHEATLEY.

THE USEFUL AND THE BEAUTIFUL.

SIR,—The article on the "Picturesque and the Useful," in last week's *Builder*, affords further illustration, if further were needed, of the fallacy of the doctrine that the useful must necessarily be beautiful,—a doctrine so frequently upheld by writers upon art. The writer falls foul of the ugliness of Telford's canal and Stephenson's railway-bridges, and inquires "why they should be so?" But I question whether it be not affectation to insist upon the useful being on all occasions gilded with a little beauty. Nature does not put all her works into a livery of ornamental plush to satisfy man. The camel, the elephant, &c., are certainly not beautiful, but they are very useful: "why should not the counsel of an architect of sufficient eminence to give weight to his opinion be sought" to modify these animals, and clothe them with a little beauty? The absurdity of such a suggestion is at once apparent. Then, why should we not be content on occasion, as nature is, with a little robust and useful ugliness? Would you desire to make the face of Socrates like that of Apollo, or are you grateful for what that ungainly concourse of dust did for humanity? The underlying fallacy of most æsthetic gabble is that the beautiful is the sole end of nature and of art. There are a time and a place for all things. In the centres of human activity, the great towns and cities, the dwelling-places of men, human taste may have greater consideration, compromises may be effected between the useful and beautiful, or the presentment of the beautiful may be the main purpose of an artist. But what above all things is required for the welfare of taste at this present juncture is a more rigorous and scientific method in the treatment of art questions. W. CAVE THOMAS.

A QUESTION OF SIZE AND SHAPE.

HAS it ever been suggested that printers and publishers of all nations, or each nation separately, should come to an arrangement, and be bound to such arrangement, to produce all books and pamphlets of stipulated sizes? At present the shapes and sizes are as ridiculous as they are troublesome to librarians — public and private—who are quite unable to produce regularity on their shelves. Many books not fitting in height and depth are placed in unknown corners, not to be found when wanted, or else are laid flat, one on another, the name, perhaps, unseen, or if seen, considerable trouble has to be gone through to pull out the desired book from the bottom of a pile (where it is sure to be), and on that account it is often abandoned. The notion of having pamphlets neatly and shapely bound is quite out of the question during the present rage for various, and sometimes ugly, shapes.

Congresses, for most purposes, are now general. Why should not those concerned in producing books and pamphlets meet, and agree to, and bind themselves down, to rules? Then would book-shelves have an orderly look, no space wasted, and no interstices left for the reception of dust.

Of course, the thickness need not be considered. It is quite time the trade should be tamed, instead of being allowed to run more wild during the last quarter of the nineteenth century. Y.

CHARGES FOR QUANTITIES.

SIR,—Will some of your correspondents tell me if a quantity surveyor, who has been engaged by a builder to take out quantities, is entitled to recover by law the usual commission for same in the event of the said builder not being successful with his estimate in getting the work?

A case exactly on all fours with the above was recently tried in a county court by a surveyor who sought to recover 1½ per cent. for quantities which amounted to 33*l.* For the defence, an architect, who evidently had no particular good feeling towards the surveyor, gave evidence against him to the effect that a custom existed which entitled the builder to a considerable reduction of the surveyor's charge, on the ground that the builder was a speculator and had to take his chance of getting the work with other builders. The result was, the judge gave a verdict for 10*l.*,—not one-third of the claim. Is this justice?

I shall be glad to hear if a similar case has been tried in a higher court, and the result; or if some light can be given on this query through the medium of your next issue. INQUIRER.

*** An arrangement to receive less than the usual charge for taking out quantities in the event of the tenderer not obtaining the work is reasonable, and very often made. In the absence of any such agreement, however, we should have supposed that a surveyor could recover a fair charge, such as 1½ per cent. is, irrespective of result. Probably if the surveyor had brought an action for a sum, *quantum meruit*, saying nothing about commission, the verdict would have been different.

THE ARTISANS' DWELLINGS ACT.

SIR,—It is very well for the vestries to oppose the Artisans' Dwellings Act, but how and where are the poor to be lodged? The overcrowding in poor neighbourhoods is scandalous, and had it not been considered imperative on sanitary grounds, the Act would never have passed. There are in London hundreds of houses, crowded with human beings, that are so foul and dilapidated that any attempt to render them healthy would be a farce, and in the suburbs it is becoming as bad; there the only shelter open to the poor is the six-roomed house thrown together by the Jerry-builder; but no workman is able to pay 30*l.* a year rent, so the six-roomed house becomes the home of three or four families, with one washhouse and one closet for all, to the serious detriment of health and morality. The only apparent remedy is the erection of blocks on the Peabody plan. At the present time a vestry south of the Thames is trying to foist on the ratepayers a new vestry-hall, at the

cost of 30,000*l.*, in opposition to the strongly-expressed opinion of the ratepayers; yet they grudge the poor a decent lodging. Of course, the owner of the highly-rented slum, and the speculating builder with houses on hand he can neither sell nor let, will both oppose the Act, and these classes are well represented on the vestries; but I hope the Government, considering the urgent necessities of the poor, will turn a deaf ear to vestries and vested interests.

JAS. YOUNG.

STRENGTHENING EMBANKMENTS.

SIR,—In a foreign paper of the 7th instant I notice it is stated that, from actual experience on extensive railways in Prussia, the embankments are very much strengthened by planting in them a species of willow tree (*salix*), white *alba* being, it would seem, preferable.

It is stated that the roots of these trees form a thick trellis or lattice enveloping the whole surface, and thus imprisoning the earth. The nature of these trees permits them to grow very readily, requiring little or no care. As a kind of creeper for protecting embankments it is, by the same authority, said to merit the attention of architects. E.

*** The use of vegetable growths to strengthen dykes in Holland is a practice of great antiquity.

MEASURING TAPES.

SIR,—In despair I write to ask you, as editors are supposed to know everything appertaining to the speciality of their papers, where can I get measuring tapes that are of any service after they have been used a few times? I have tried all sorts. There can be no doubt that the steel tapes would be the best if manufacturers would make them of more substance, and would link them say every 5 ft. and put two swivels in a 66 ft. tape. As they are made, all, or at least all I have been able to get, are warranted to kink and break the first or second time they are used, as the metal is so thin, and consequently so sharp, that you stand a good chance of having a finger or two cleanly cut through before you know where you are, which is not quite pleasant.

INQUIRER.

"DISTRICT MARKETS."

SIR,—A company is already in active working order, carrying out the various objects referred to in last week's *Builder*.

The name is "The Local Meat Markets" (Limited); the first one, called the "Dowgate Market," is in Upper Thames-street, and occupies the space under the Cannon-street Station, City; others will be erected in due course. I enclose full particulars, and as architect to the company, I should feel obliged if you could further the important problem of supplying good food at reasonable prices.

PHILIP B. LEE.

CHURCH-BUILDING NEWS.

Walkern.—The rood-screen in the ancient parish church here has, at the cost of the vicar (the Rev. J. C. Wright), been restored. The chancel was restored some little time ago. The ancient rood-screen had fallen into a deplorable and dangerous state of decay. Mr. Hugh Roumieu Gough, architect, of Westminster, was consulted by Mr. Wright, and under Mr. Gough's immediate direction the screen was taken down, and having been thoroughly overhauled, is now once again *in situ*. It is an excellent example of Perpendicular Gothic woodwork, some 12 ft. or 13 ft. high, and reaching right across the chancel. The lower panels are filled with traceried and carved work of a vigorous kind. Above, a wealth of pierced open-work bursts out from the supporting standards, and exhibits much delicate and refined detail thereon. The main cornice above is deeply moulded, and has its hollows enriched by detached patera. A new moulded cill has been put in as a footing, and the main uprights, which were in a bad state of decay, have been scarfed and mortised. On either side of the central doorway are buttresses surmounted by carved pinnacles, and similar buttresses are in like positions upon the other uprights. The screen had been bedaubed with a variety of coats of paint, whitewash, varnish, graining, &c., by successive generations of churchwardens. These have all been removed by a chemical preparation. The work of restoring the screen was entrusted to Mr. Harry Hems, of Exeter.

Ealing.—The church of St. Stephen, Castlehill, Ealing, has just been enlarged by a new south aisle, south transept, organ-chamber (with choir-vestry under), and south porch, giving an addition of 224 sittings to the church. The work has been carried out from the designs and under the superintendence of Mr. Rovedino, architect, the builder being Mr. Nye, of Ealing.

VARIORUM.

DR. HENRY SCHLIEMANN'S expected new volume, "Ilios: the City and Country of the Trojans," has been published by Mr. Murray. It gives the result of researches and discoveries throughout the Troad in the years 1871, 1872, 1873, 1878, and 1879, and includes appendices and notes by Professors Virchow, Max Müller, A. H. Sayce, J. P. Mahaffy, Brugsch-Bey, and several others, illustrating, amplifying, and confirming the brilliant and astounding researches and discoveries made by Dr. Schliemann. The book has an interest and value beyond ordinary commendation, and will receive at our hands in due course the same amount of consideration that we felt ourselves bound to give to the previous works of its author.——"Japanese Pottery," being a native report, with an introduction and catalogue by Augustus W. Franks, M.A. (Chapman & Hall). This is one of the South Kensington hand-books, but differs somewhat from the others, in consequence of the circumstances under which it was prepared. The pith of it is translated from a report by a Japanese expert, and Mr. Augustine Franks has contributed much from his remarkable stores of knowledge to increase its value. The illustrations include a large number of marks.——Hardwicke's *Science Gossip* for November 1st includes an interesting and instructive paper, entitled, "A Wood-Carver's Experience of the Death-watch Beetle."——"The Arithmesis" (Dunton, 352, Clapham-road) is a superior kind of Ready Reckoner. It refers to marketings, wages, savings, interest, and victualling, and will be found useful by many persons.——The *American Architect* devotes a whole number (253, October 30th) to an illustrated account of the Museum of Fine Arts, Boston, and a very interesting number it is.

Miscellanea.

The "Inner Circle" Railway Completion.—A letter has been addressed to the City Commission of Sewers by the Joint Committee of the Metropolitan and District Railways relative to the Inner Circle Railway completion, offering 500,000*l.* in consideration of the Commission providing the railways with 60 ft. of clear space, partly under the surface and partly open, for the construction of stations and works between certain points marked in the plans, and a sufficient space, 37 ft. wide, for the construction of a double line and works under the property to be acquired between those points. In regard to any additional property required for station approaches, the Joint Committee were willing to purchase it and to re-sell to the Commission any surplus needed for street improvements at a price to be agreed on by arbitration. The letter was referred for consideration to the Improvement Committee, with power to confer with the Metropolitan Board of Works.

A Local Government Inquiry was held at West Bromwich on the 9th inst. before Mr. J. Thornhill Harrison, C.E., respecting an application made by the Improvement Commissioners for sanction to borrow the sum of 97,500*l.* for the following purposes:—60,000*l.* for the purchase of land, and carrying out the 1st section of the Main Drainage Scheme prepared by Mr. John T. Eayrs, C.E.; 25,000*l.* for the completion of the gas-works; 10,000*l.* for paving footpaths with blue bricks; 1,500*l.* for fire-hydrants; and 1,000*l.* for refreshment-room and shelter for public park. Evidence was given in detail respecting the various amounts to which there was no opposition. The inspector afterwards visited the site of the proposed sewage-farm.

Gateshead School Board.—At a meeting on the 10th inst. the plans of Messrs. Oliver & Leeson, architects, Newcastle-on-Tyne, for proposed group of schools at Durham-road, were approved. The same architects were instructed to prepare designs for another group of schools at Askew-road.

Dr. Siemens's New Fire-Grate.—Dr. C. W. Siemens describes in *Nature* a new modification of the ordinary fire-grate, by which all smoke is done away with, and all the heat is thrown out to the room, at a cost considerably less than the ordinary coal-consuming grate. Instead of the bars at the bottom, an iron dead-plate is substituted, and, instead of coal, coke or anthracite is used. To this dead-plate is riveted a stout copper-plate facing the back of the fire-grate, and extending 5 in. both upwards and downwards from the point of junction. The dead-plate stops short about 1 in. behind the bottom bar of the grate to make room for ½-in. gas-pipe, which is perforated with holes of about 1-20th in. in diameter, placed zig-zag at distances of ¾ in. along its upper surface. This pipe rests upon a lower plate, which is bent downwards towards the back, so as to provide a vertical and horizontal channel of about 1 in. in breadth between the two plates. A trap-door, held up by a spring, is provided for the discharge of ashes falling into this channel. The vertical portion of this channel is occupied by a strip of sheet copper, about 4 in. deep, bent in and out like a lady's frill, and riveted to the copper back-piece. Copper being an excellent conductor of heat, this piece, presenting (if not less than ¼ in. thick) a considerable sectional conductive area, transfers the heat from the back of the grate to the frill-work in the vertical channel. An air current is set up by this heat, which in passing along the horizontal channel impinges on the line of gas-flames and greatly increases their brilliancy. So great is the heat imparted to the air by this simple arrangement that a piece of lead of about half a pound in weight introduced through the trap-door into this channel melted in five minutes, proving a temperature to exist exceeding 619 deg. F. or 326 deg. C. The abstraction of heat from the back has, moreover, the advantage of retarding the combustion of the coke there while promoting it at the front of the grate. In a large fireplace in a room of 7,200 cubic feet, facing the north, the temperature was easily maintained at 60 deg., and the result of one day's campaign of nine hours was a consumption of 62 cubic feet of gas and 22 lb. of coke, the total cost being 4·725d., or at the rate of about one half-penny per hour.

The Re-building of Whitechapel Church. On the 11th inst. a meeting was held in the church-room of Whitechapel Church, where the trustees of the parish and the committee for the building of the old church had been invited to attend. The rector, the Rev. J. F. Kitto, presided, and presented a report on behalf of the rector and churchwardens, who, with Mr. Gadesden, had been appointed to communicate with Mr. Coope, M.P., with a view to his undertaking the rebuilding of the church. The report stated that Mr. Coope had undertaken to make himself responsible for the rebuilding of the church, subject to certain conditions as to means being taken with the view to obtain better acoustical properties in the church when rebuilt than were found to be possessed by the church burnt down, as to the approval by the parishioners of the designs for the new building, and as to certain sums being set apart from the insurance-money in order to reinstate the font, lectern, pulpit, stained-glass, and other special features. The report was adopted, and Mr. Coope's offer accepted with gratitude.

American Institute of Architects.—A meeting of the Convention of the American Institute of Architects was to take place on November 17th, in Philadelphia. Several matters of great general interest were to be decided at the session. Several different schemes were to be offered for the remodelling of the constitution, which will, whatever plan is adopted, be a momentous event. Besides this business, special reports were to be presented upon colonial architecture and on the construction of tenement-houses, by committees appointed for the purpose at the last convention, and it was hoped that a number of interesting papers would be read and discussed.

Removal of a Church.—The church of St. Stephen, Edge-hill, Liverpool, is being removed from one side of the street to another for a railway improvement. It was built from designs by the late Sir Gilbert Scott.

North Woolwich Gardens.—The *City Press* says it is proposed to convert into a recreation-ground the well-known gardens at North Woolwich; and the Metropolitan Board of Works is to be asked to purchase them.

Electric Lighting for the City.—On Tuesday, at the meeting of the City Commissioners of Sewers, a report was brought up by Mr. Innes, from the Streets Committee, on the subject of electric lighting in the City. They stated that they had received a variety of tenders, in considering which they had been guided not only by the prices mentioned but by the effect produced by the different systems in actual operation, all of which they had seen. They had decided, for the purposes of the experiment, to divide the streets into three districts, each of them including one of the City bridges. The first district would comprise Blackfriars-bridge, New Bridge-steeet, Ludgate-circus, Ludgate-hill, St. Paul's-churchyard (north side), and Cheapside, as far as King-street. They recommended that the tender for this district of the Anglo-American Electric Light Company (Brush system) should be accepted, at a cost of 1,410*l.* for the twelve months. The number of electric lamps would be thirty-two, replacing about 150 gas-lamps. The second district would comprise Southwark Bridge, Queen Victoria-street, lower part of Queen-street, and Queen-street-place. They suggested the acceptance of the tender of the Electric and Magnetic Company (Jablochkoff system), at a cost of 2,930*l.* for the twelve months. The number of electric lamps would be fifty-two, replacing about 161 gas-lamps. The third district would comprise London Bridge, upper part of Queen-street, Cheapside (between King-street and the Poultry), King-street, Guildhall-yard, Poultry, Mansion House-street, the Royal Exchange, King William-street, and Adelaide-place. For this district they advised the acceptance of the tender of Messrs. Siemens Brothers, at a cost of 3,720*l.* for the year. The number of electric lamps would be 32, replacing 138 gas-lamps. On a rough calculation the cost, including the plant, &c., would be about four times the price now paid for gas-lighting, but, eliminating the expenses which would not recur, the cost would be only twice that of gas. The Commission unanimously adopted the report of the committee, and the experiment is to commence on the 1st of February next.

St Mark's, Venice.—Under the auspices of the Society for the Preservation of Ancient Buildings, a committee has been appointed to endeavour to get some heed paid to its protest against the proposed works at St. Mark's, Venice. They say that, "the more the recent restorations of St. Mark's are examined, the more clearly does it appear that those who are responsible for their execution had quite determined to carry them further in the same spirit. It is impossible to doubt, for instance, from the evidence of the portion already executed at the south-west angle, that the architect who has just rebuilt the southern front of the nave contemplated rebuilding the western front also, and on new lines; whilst the mosaicists would undoubtedly be ready to carry on their works on pavement, and ceiling, and walls, with precisely the same justification as before. This being the case, and recognising the wide-spread and extraordinary love for this great church among educated men of all countries, specially among students of art, and the real and profoundly sad sensation which has been produced among them by these restorations, it is felt that the only course open to those who wish to prevent such a calamity as the completion of such works would certainly be, is to join themselves together in a committee, with the sole object of using all possible means for the preservation of the genuine character of St. Mark's. The exceptional nature of the danger seems to justify what is no doubt an exceptional proceeding. The object will be to use every means for promoting a sympathetic co-operation with those numerous and influential Italians who hold the same views. The committee, individually and as a body, being actuated by the most cordial and friendly feelings towards the Italian nation, extreme care will be taken to act as delicately as possible, by friendly representations, and with every determination not to wound any national susceptibilities, or to take exception to what are plainly necessary repairs." The honorary secretary, Mr. Henry Wallis (9, Buckingham-street, Strand) will be glad to receive the names of those who may be disposed to help them.

Institution of Surveyors.—At the next meeting, to be held on Monday evening, November 22nd, a paper will be read by Mr. Francis Turner (Associate), entitled, "The Law as affecting Quantity Surveyors."

The Roman Villa at Brading.—Sir: With reference to this subject, which has excited so much public interest, I am directed to acquaint you that, by the co-operation of the Society of Antiquaries and the Royal Institute of British Architects, an influential committee has been formed to continue the researches, protect and exhibit on the spot the discoveries, and suitably record them. The small preliminary committee which has hitherto acted, of which Mr. C. Nicholson, of Ventnor, was treasurer, has dissolved itself, to facilitate the new organisation, and the owners of the estate on which the discoveries have been made are represented on the new committee, which will not in any way supersede or interfere with the labours so satisfactorily performed by Messrs. John E. Price and F. G. Hilton Price, but will strengthen their hands and leave the executive with them. The committee hopes to be able to prepare its report in the early part of next month. Meanwhile, I shall be glad to furnish further particulars to any persons who may be desirous to promote the objects of the committee by contributing to the Roman Villa Fund. The committee consists of Major A. F. Leeds, chairman; H. C. Coote, John Evans, A. W. Franks, W. A. Glyan, George Godwin, Professor T. Hayter Lewis, Sir John Lubbock, H. S. Milman, W. Munns, F. C. Penrose, Major-General Pitt Rivers, F. G. Hilton Price, J. E. Price, Professor Rolleston, C. Roach Smith, Captain Thorp, J. Whichcord, and Alfred White. The treasurer is Lieutenant-Colonel Malone, Capital and Counties Bank (Limited), Ryde Branch, but subscriptions may also be paid to Mr. F. G. H. Price, at Messrs. Childs' Bank, London.—E. W. Brabrook, Hon. Sec.

The Steam Navvy.—The usual fortnightly meeting of the Liverpool Engineering Society was held at the Royal Institution, Colquitt-street, on the 10th inst., Mr. Alexander Ross, president, in the chair, when a paper entitled "Earthworks and the Steam Navvy," was read by Mr. H. O. Baldry. The paper chiefly consisted of a description of the steam navvy as constructed by Messrs. Ruston & Dunbar, and the method of its employment in earthwork excavations, followed by an estimate of the saving to be effected by its use in place of hand labour. The most effective mode of working is that in which the machine stands on a central line of rails, with a wagon-road on each side; but this is only available in excavations 40 ft. wide or more. So that in ordinary railway-cuttings, a single wagon-road has to be used. The machine requires about twelve men for its operation, and can excavate about 500 cubic yards per day of light clay or moderately-soft chalk, one cubic yard being lifted by the excavating bucket at each stroke. At this rate of working the cost would be at the rate of about 3d. per yard, as compared with 4½d. by hand labour.

Windsor Castle.—At Windsor Castle, preparations are being made for the return of her Majesty from Scotland, and in anticipation of the arrival of the Court from the North. During the absence of the Queen at Osborne and in the Highlands various necessary repairs and renovations have been effected by the Office of Works Department in the buildings used by the Royal Family on the east side of the Castle. At St. George's Chapel the upper portion of the extensive scaffolding, erected for the repairing of the west end, has been struck, and the work of refacing with Oxford stone, which is being carried out under the supervision of Mr. Nutt, clerk of the works to the Dean and Chapter, is nearly completed. The stones used have been dressed with a composition designed to preserve the masonry from the weather, the west front, owing to its lofty elevation, being greatly exposed to the elements.

Erith.—The Church of St. John the Baptist at Erith has recently received an addition in the form of two stained-glass windows. The first, situated in the west aisle (a three-light window), contains a representation of "Christ healing the Sick." In the north window are full-length figures of the Apostles Peter, James, and John. The windows were designed and executed by Mr. Geo. Rees, of Lamb's Conduit-street.

Presentation.—The workmen employed at Churchers College, Petersfield, met together at the Swan Hotel, on the evening of the 13th inst., and presented to Mr. B. K. Webber, the late manager, on his leaving, a token of their esteem and regard in the shape of a silver goblet. The chairman, Mr. G. Isaacs, spoke in warm terms of their late manager.

St. Etheldreda, Ely-Place.—Two large-size statues of St. Peter and St. Paul have recently been placed in position in this ancient chapel, on the carved stone corbels of the wall arcading under the arched gabling between the windows. It is intended to reinstate the whole series of the twelve Apostles and four Evangelists. The sculptor, Mr. Doherty, of Blackfriars, has followed, to a certain extent, the figures in the interesting Shrine of St. Sibald at Nuremburg, a casting of which is at the South Kensington Museum. It was at the suggestion of the late Sir George Gilbert Scott that the projecting corbels were restored by the architects from one which had escaped destruction.

TENDERS

For new stables at Smitham Bottom, near Caterham Junction, for Mr. James Watney, M.P. Mr. C. W. Bovis, architect:—

		Extra if built in Cement.
Rowland	£985 0 0	£50 0 0
Grant (accepted)	978 0 0	52 0 0

For building two houses and shops adjoining the New Cock Tavern, Holloway-road, for Mr. J. W. Jennings. Quantities by Mr. H. Worthington and Mr. L. Canning. Mr. W. J. Worthington, architect:—

Cowland, Bros.	£2,194 0 0
Phillips	2,165 0 0
Cocks	2,139 0 0
Morter	2,082 0 0
Beale	2,019 0 0
Lamble (accepted)	1,989 0 0

For erection of two shops, with dwelling-houses attached, in Front-street, Arnold, Notts. Mr. Fredk. Jackson, architect:—

Marriott & Wartnaby, Nottingham	£685 0 0
Bell & Son, Nottingham	628 0 0
Jew & Hickling, Arnold	525 0 0
Smith & Greaves, Arnold	518 0 0
Wayte, Arnold (accepted)	447 10 0

For alteration and enlargement of Upton House, Upton, Essex, for Mr. J. S. Curwen. Mr. George McDonell, architect:—

Becroft (accepted)	£359 0 0

For erecting new mission-hall in Villier-road, Willesden, for the Rev. J. Arthur Rawlins. Mr. W. Graves, architect. Quantities by Mr. W. Barnett:—

Tennant	£1,435 0 0
Marks	1,389 0 0
Hunt	1,381 0 0
Stimpson & Co.	1,363 0 0
Vears & Co.	1,344 0 0
Toms	1,339 0 0
Ward	1,325 0 0
Spencer & Co.	1,220 0 0

For pulling down and rebuilding the Crown and Anchor public-house, Brixton-road, for Mr. R. May. Mr. W. T. Farthing, architect:—

Kirk & Randall	£4,340 0 0
Sly	4,201 0 0
Patman & Fotheringham	4,185 0 0
Jackson & Todd	3,887 0 0
Spencer & Co.	3,850 0 0
Gill	3,767 0 0
Burge & Moore	3,731 0 0
Burman	3,577 0 0
Francis	3,570 0 0

For superstructure of warehouses, Farringdon-street Mr. George Vickery, architect:—

Hall, Beddall, & Co.	£15,970 0 0
J. & J. Greenwood	15,640 0 0
Colls & Sons	15,510 0 0
Crabb	15,320 0 0
Hart	15,244 0 0
Lawrance	15,176 0 0
Ashby, Bros.	14,900 0 0
Ashby & Horner	14,769 0 0
Conder	14,778 0 0
Brass	14,733 0 0

For mission premises, with shops, High-street, Hoxton. Mr. M. M. Glover, architect:—

Jarvis & Son	£5,939 0 0
Staines & Son	5,684 0 0
Williams & Son	5,530 0 0

For proposed alterations at Carpenters' Arms, Carpenters-road, Stratford, for Mr. Symes. Mr. H. J. Newton, architect:—

Strong, Bros.	£400 0 0
Brown	368 0 0
Cross	292 0 0
Hawkins	285 0 0
Walker (accepted)	205 0 0
New Counter.	
Warne	£118 0 0
Heath	109 0 0
Matthews	93 10 0
Mott (accepted)	92 10 0

For proposed alterations at the George and Dragon, for Mr. Bower, at York-road, Battersea. Mr. H. J. Newton, architect:—

Beale	£317 0 0
Taylor	312 0 0
Lambie	310 0 0
Godden (accepted)	283 0 0
New Counter.	
Heath	£157 0 0
Warne	151 0 0
Hellings	149 10 0
Moody (accepted)	137 10 0

For repairs, &c., to shops, City-road, for Mr. Mace:—

Taylor & Parfitt (accepted)	£472 0 0

For the erection of two shops and dwelling-houses in Much Park-street, Coventry, for Mr. E. Ralphs. Mr. Herbert W. Chattaway, architect:—

Brown, Coventry	£1,175 0 0
Worwood, Coventry	993 0 0
Storer, Coventry	990 0 0
Joyce & Harrison, Leicester	975 0 0
Frith, Coventry	965 0 0
Haywood, Coventry	930 0 0
Mayo, Coventry (accepted)	875 0 0

For alterations and additions to the Cancer Hospital, Brompton. Mr. A. Graham, architect:—

Maton	£30,894 0 0
Bull & Son	27,900 0 0
Higgs & Hill	27,840 0 0
Nightingale	27,781 0 0
Bywaters	27,555 0 0
Chappell	27,530 0 0
Shaw	27,500 0 0
Patrick & Son	27,318 0 0
Smith & Co.	27,285 0 0
Braid & Co.	27,200 0 0
Hall, Beddall, & Co.	26,850 0 0
Holland & Hannen	26,827 0 0
Brass	26,635 0 0
Lawrance	26,223 0 0

For shop front and alterations at Leighton Buzzard, for Mr. W. S. Page. Mr. Gotto, architect:—

Dawson	£290 0 0
Webb	277 17 0
Mead	270 0 0
Groom	249 10 0
Edwards	249 0 0
Garside	246 0 0
Cook	244 10 0
Gibbs (accepted)	193 0 0

For a new house in the Finchley-road, London, for Mr. Samuel Palmer. Messrs. Morris & Stallwood, architects. Quantities by Messrs. Henry Cooper & Sons:—

Hall, Beddall, & Co.	£13,674 0 0
Clarke & Bracey	12,667 0 0
Shaw	12,637 0 0
Braid & Co.	12,300 0 0
Lucas, Bros.	12,144 0 0
Brass (accepted)	11,769 0 0

For additions and alterations at No. 5, Forest-place, Leytonstone. Mr. G. E. Pritchett, architect:—

		Credit for old materials.
Eaton	£568 0 0	£10 0 0
Day	557 0 0	5 0 0
Cains	534 5 0	10 0 0
Wood	480 0 0	10 0 0
Hosking	487 0 0	20 0 0
Body & Co.	476 17 0	15 0 0
Arber	467 0 0	5 0 0

For the erection of villa residence at Beulah-hill, Upper Norwood, for Mr. W. S. Black. Mr. Charles Bell, architect. Quantities supplied by Mr. H. Lovegrove:—

Jenkins	£2,485 0 0
Eldridge & Gee	2,400 0 0
Wright	2,332 0 0
Hobson	2,297 0 0
Woodward	2,250 0 0
J. & C. Bowyer	2,230 0 0
Castle, Bros.	2,200 0 0
J. & S. Bowyer	2,077 0 0
Smith & Sons	2,069 0 0
Tarrant & Sons	1,998 0 0
Goad	1,845 0 0

For alterations to Nos. 108, 110, and 112, Belvedere-road, Lambeth, for conversion into offices for the Anglo-American Electric Light Company. Mr. George Edwards, architect. Quantities supplied by Mr. H. Lovegrove:—

Green	£810 0 0
Goad	741 0 0
Richardson	710 0 0
Stimpson & Co.	706 0 0
White	630 0 0
Cullum (accepted)	580 0 0

For house and conservatory, South-hill Park Estate, Bromley, for Mr. J. H. Lepper. Quantities supplied. Mr. J. Sulman, architect:—

	House.	Conservatory.
Higgs & Hill	£1,631 0 0	£89 0 0
Bolding	1,600 0 0	100 0 0
Bowyer	1,558 0 0	108 0 0
Stephens & Bastow	1,499 0 0	91 0 0
Arnold	1,443 0 0	85 0 0
Douglas & Payne	1,436 0 0	92 0 0
Smith & Sons	1,426 0 0	83 0 0
Crossley	1,376 0 0	83 0 0

For a Wesleyan Chapel, Addiscombe, Croydon. Mr. H. P. Bonner, architect. Quantities by Mr. R. W. Griffiths:—

Clark & Bracey	£7,266 0 0
Staines & Sons	7,184 0 0
Crossley	7,120 0 0
Marriage	7,070 0 0
Perry & Co.	6,981 0 0
Smith & Sons	6,875 0 0
Higgs	5,903 0 0

For alterations to Beech House, Park-lane, Croydon, for Mr. J. Brown. Messrs. Podmore & Martin architects:—

Marriage	£326 0 0
Smith & Sons	291 0 0
Pearson & Myles	249 0 0

For shops, and alterations at the Pelicans, Peckham-road, for Mr. Hudson. Mr. Millard, architect:—

Macey & Sons	£2,995 0 0
Taylor & Parfitt	2,835 0 0
North, Bros.	2,585 0 0

For repairs at Copenhagen-place, Limehouse, for Mr. Gilling. Messrs. Gordon & Lowther, architects:—

Dye	£293 0 0
Taylor & Parfitt	285 0 0
Starkey	282 0 0

Richmond Baths.—Mr. Lucas writes to say that, in hurry, two important "bills" were omitted, and that he withdrew his tender on discovering the error.

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A Young Engineer (seaside sand makes very good concrete for foundations, but should not be used in concrete for walls above ground without strict precautionary measures)—E. B.—G. R. W.—J. E.—G. S. A.—G. T. C.—A. A.—H. W. C.—O. & L.—S. W. H.—G. McD.—J. Y.—S. R. L.—F. J.—H. & R.—W. H. G.—T. & P.—G. E.—J. S. & Sons.—G. R. W.—R. P.—G. T. C.—J. B.—I. L.—H. M.—W. W.—A. A.—L. S.—W. P. B.—H. J. N.—Mr. E.—R. R.—J. & S. S.—J. H.—G. H.—S. & Co.—J. Y.—G. V.—Mr. H.—S. & Son.—J. W. P.—C. S.—E. L.—F. G.—J. B.—A. S.—C. R. S.—C. M.—W. C.—H. W.—W. E.—W. W.—E. F.—E. B. W.—G. M.—H. H.—H. A.—G. R. C.—S. W. (good wishes).—W. H. L. (next week).

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